RAILROAD GAZETTE

FRIDAY, APRIL 26, 1878.

Newark Passenger Station.

In this number of the *Railroad Gazette* we give engravings of a very commodious and neatly designed station for Newark, Del., on the Philadelphia, Wilmington & Delaware Railroad. There is a population of about 3,000 inhabitants at this place, and the station is intended to accommodate the local travel. There is little to be said of the structure that is not shown in the engravings excepting that it is built of brick, with a slate roof.

NEWARK PASSENGER STATION: PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.

S. T. Fuller, Chief Engineer.

Front Elevation.

End Elevation.

The Duties and Position of the Traffic Auditor in England.

Even to the fully initiated, railway accounting often appears, as it in reality is, intricate and perplexing to a degree. Not even those primitive little lines, which, beginning nowhere and ending in no place in particular, and which are innocent of the complications of through booking, can be made to pay dividend without an amount of account-keeping which would seem to the outsider as almost inexplicable. It is not, however, our intention in this paper to discuss the general question of railway accounting, which includes all the elaborate machinery called into play in order to strike the half-yearly balance between revenue and expenditure, between charge and discharge, and which results in the declaration of dividend. Of that we shall take occasion to speak later on. We shall here confine our attention to one special and distinct phase of the question—that, namely, of the *traffic audit*. And, first, let us say, that by the traffic audit we mean simply the duties performed in the *audit office*. In some cases these duties are laid upon the accountant, and form a branch of his work. The audit office is so much more frequently separate and independent, however, that we prefer to treat it as if it were universally so, and we think that our readers will appreciate the separate treatment.

The Clearing House system has rendered it possible to book passengers or to dispatch goods from Land's End to John O'Groats, at through rates and fares, the passenger or the trader having no need for worry about re-booking, and the various companies whose lines form the different links in the route being assured of their share of the profits of carriage. A most important factor in working this out is the Traffic Auditor, who is the medium through whom the Clearing House deals with the companies in matters of division of receipts. Booking and parcels clerks receive money in rates and fares, and give the passenger or trader certain rights and privileges over their company's lines, and in the case of through transit over connecting lines. The Traffic Auditor is, as a rule, advised of the receipts from these sources daily, by means of a copy of the cash-note which accompanies the remittances to the bank, or to the company's cashier, and it is his province to see that these moneys are duly accounted for. Goods agents or cashiers receive "porters'" collections, "paid in" freights, live stock and mineral charges, and collect weekly or monthly accounts, on the one hand, and pay claims, "paid on" charges, etc., on the other hand, and send their cash to the bank, or the company's cashier daily, supplying the Traffic Auditor with a copy of the cash-note and balancing the whole for that officer in the monthly balance sheet. The Traffic Auditor examines these statements of "charge" and "discharge" as often as he pleases, and as minutely as time and opportunity will admit. He is, practically, responsible for correct and regular accounting between the stations and the company, and is the only check upon carelessness or infidelity which the company possesses in traffic matters. He is a very wholesome check, because the radically dishonest cannot well escape detection, and, knowing that, are often kept in the narrow but safe and comfortable groove of uprightness, and the strictly scrupulous and careful find, in his periodical or intermittent audit of their accounts, and his approving initials appended to each as it is examined, that confirmation of their conscious rectitude, and of their painstaking regularity, which is its own reward. We are far from saying that a thorough and capable audit of station accounts always succeeds in preventing dishonesty. The history of every company affords too frequent illustration that in spite of that care deception has been successfully practiced. But we think it is due to the traffic audit, not merely to say that it has prevented deceit and fraud in thousands of possible cases, but it has the credit of *discovering* these in innumerable instances, and of bringing the guilty to justice. And it is impossible to believe that with ever-increasing experience, methods of station accounting will not one day be devised whereby the morally weak will be protected against themselves, and the work of the Traffic Auditor prove a yet more satisfactory check upon those holding positions of trust. When cases of incapacity or fraud are suspected a special investigation is made—by the audit office—and a report prepared for the Goods Manager, or the General Superintendent, and the General Manager, in order that the person or persons concerned may be dealt with. When a station master, cashier or booking-clerk is removed, a special audit of the books is made, so that the new incumbent of either of these offices may have a clear start. When a new passenger station is about to be opened the Traffic Auditor hands over the necessary books and tickets to the newly appointed master, or, as in the case of superior stations, to the booking-clerk, giving him all needful instructions, and taking his receipt for the property committed to his charge.

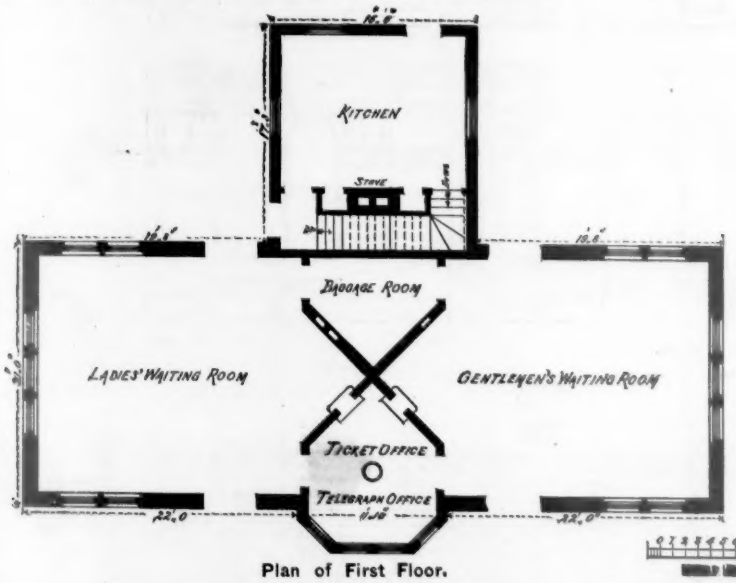
In the interests of his company, the Traffic Auditor is an observer of routes. When rates and fares are arranged between two competing companies for traffic which is to pass from one to the other company's system; and when these companies have more that one point of contact, or exchange for that traffic, the receipts are usually divisible between the companies by the most direct route. It sometimes happens that the sending company, however, in its natural zeal for

its own interest, sends the traffic to the most distant junction, in order to secure, if possible, the longer mileage. Under a watchful audit this is not likely to be successful, however, as, the department, being provided with a note of the arrangement, is certain to check the irregularity, and to insist upon a division by the shortest route. In connection with this, the Traffic Auditor is always provided with copies of agreements made between the company he represents, its competitors and its allies. With the various clauses of these agreements he must make himself acquainted, in order that he may know his company's powers and obligations. A famous orator of a past age once declared in his place in the Imperial Parliament that he could "drive a coach and six through any act" the legislature might pass. The saying was as true as it was witty, and it is as applicable to the work of our senators of the present day as to that of the days of the celebrated O'Connell. It is no less true of those documents so frequently scheduled to railway acts of our time, and called agreements; and it is perhaps still more true of those often less binding agreements which are executed between companies, or between any of these and their traders; or yet again between them and certain corporations for mutual advantage. We do not say that the ambiguity of terms used in acts of parliament, agreements, and such documents, is at any time *intended*. We charitably blame our copious English tongue, which is so full of synonymous words and phrases that it is difficult so avoid the employment of some which may not mean exactly the same thing to everybody. One of the special difficulties which beset the path of the traffic auditor is the strict interpretation of debatable terms in traffic agreements, and this is a literary and legal test which proves the quality of the man. He is not, of course, left to read the riddle alone. He has probably had no share in the construction of its clauses, and no responsibility in its looseness of expression; consequently, he consults with the General Manager, the Goods Manager, or the company's Solicitor, and it may not unfrequently happen that, in his unclouded, unbiassed view, reading it for the first time, and free from the mental fatigue and strain of drafting it, he lets in a new light upon some faulty phrase which alters his company's position with respect to the agreement, to the apprehension even of its authors.

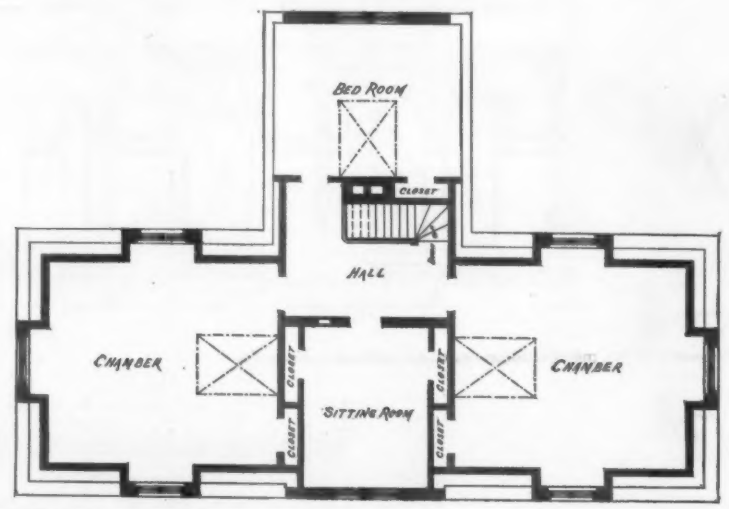
The Traffic Auditor has the adjustment of traffic accounts with leased companies, and with those whose traffic is worked by his own company—and that is always an onerous task, requiring much discretion and tact. He is also called upon from time to time to make up statements of traffic for the information of the Board—for the management, or for parliamentary warfare. There is, we may observe, about the very air of the audit office a kind of *privacy* which seems to say: "No admittance, except on business." The department is of the nature of a detective force, whose operations none may know till the result is ascertained. This is true of its investigations, whether periodical or special. It is much more true of its care of the records of weekly traffic receipts. Possessing summaries of all kinds of traffic working over his company's lines, and being in constant communication with the Clearing House, the Traffic Auditor is in a position to indicate—once a week—by how much the gross receipts have increased or decreased in comparison with the corresponding week of the previous year. This he does in his traffic return. The eager waiting for these weekly publications, and the effect they have on the prices of stocks on "'Change," are matter of common observation, so that a speculating and investing public seem fully alive to the value of the information supplied through this important public medium, and no one will, therefore, fail to see that the utmost reticence is needed on the part of the officer who wields a weapon so dangerous. The problem of the week, about which there is so much breathless anxiety, must be worked out by the Traffic Auditor personally, or with the aid of a trusted assistant, lest many-tongued rumor, lynx-eyed and eavesdropping, should carry away even a hint of the secret before it is ripe for divulgence. Passenger tickets are issued from the audit office to the stations with a debit of their value; and, being treated as cash, they must be accounted for to the audit office. This arrangement includes season and traders', or composition tickets, together with tourist and picnic tickets, in their season. Parcels, traffic, horses and dogs, with game and poultry—all are included in returns to the Traffic Auditor, and come under his cognizance; while the ticket-collecting staff forward to his office daily all tickets, passes, etc., taken from passengers at their several stations.

This is a hasty review of the chief functions of the traffic audit; but it may be sufficient to indicate, in broad outline, the scope and requirements of the office. The man who would administer it thoroughly must needs be no stranger to railway work, and must be a fair accountant. There are many details of station accounting to which our space offers no opportunity of even referring; and while the chief of the department charged with seeing that everything is carefully accounted cannot be expected to investigate everything personally, it is obvious that he should know how everything is done, and advise in cases of complication. He cannot be too fully and broadly cultured—no officer can—and he should specially be so fair a student of English as to be able to weigh the relative value of synonymous terms. We are speaking to our youthful aspirants to the office, well knowing that the present incumbents, in a majority of instances, illustrate our high ideal with many graces of capacity. Conscientiousness and industry are important qualifications, and cautious reserve is indispensable.

Such an office as the audit demands one chief assistant—one controlling head—one unfailing, trustworthy confidant. As in other departments, so here—this principal assistant should possess the same qualifications as his chief. If he have them not, he is like a broken reed—when most needed he fails. Where the Traffic Auditor is a man of the proper brand, his assistants have opportunities of improvement which only carelessness or incapacity would prevent them taking advantage of. Give us the *head* and we will prophecy as to the hands. The chief clerk, or principal assistant, coming most into contact with the head of the department, insensibly acquires style and tact from his association with his superior; and, if he be a sensible man, will be certain to discover through that very association the lurking ignorance with which the empty corners in his brain had been stuffed, and will gradually build up experiences of his own. Besides the principal assistant, there are heads of departments, the chief division of work in the office being goods and passengers. In the former the chief duty of the staff is to receive and check the abstracts or summaries of goods, live stock and mineral traffic, sent in from all stations; to record them; to pass them on to the Clearing House, and to correspond with the latter, and with stations in cases of discrepancy; and to see that the company's due proportion of the receipts are credited to it. There are minor details of work, such as the keeping of "rope" and "sack" accounts, the check of monthly balance sheets, etc., which we need not do more than mention. The staff in this department has frequent interruption, in its monthly routine of work, in the constant demand for traffic statements, a kind of special duty which requires some care and more smartness. There is also attached to the department a staff of traveling audit inspectors, who go now here, anon there, dropping down as from another sphere upon a station unawares, making investigation of books, and reporting upon outstandings and irregularities. In the passenger department the duties are as similar as the dissimilarity of the traffic will allow. There are the traveling auditors, making raid upon station masters and booking clerks, examining ticket stock and cash remittances; the office staff, taking account of station debits for tickets supplied, of station credits for tickets sold, advising the Clearing House by monthly abstracts or summaries of all foreign traffic, and taking care that the due division is credited by the latter receiving and duly checking station summaries of parcel traffic, horses, carriages, dogs, game and passenger live-stock, recording the local, and advising the Clearing House of the foreign, for mileage division of the receipts. This is, in brief, the work of the audit office. Its staff of clerks should be fair, accurate and expert figurers. They have no opportunities of acquiring, in their routine duty facility in composition, for they have few letters to write. They have no chance of learning anything of the changeful out-of-door work of active railway management. There is a certain monotonousness about their daily labor which, at the first blush, is repellant; but to many mental constitutions there is a charm in figures and their infinite capacity of involution, and the audit office has, therefore, an attraction for all such, which, allied with the consciousness that the work upon which they are engaged is second to none in the service in importance, will always secure for it clever, clear-headed and painstaking men, whose labors are worthy of fair remuneration. The traveling staff have responsible duties to perform, but should always discharge them with suavity, and we believe they are exemplary in that respect.—*The Railway Sheet* (*London*).



Plan of First Floor.



Plan of Second Floor.

Inventors and Inventions.

Mr. H. W. Pendred, C. E., writes to *Iron* (London) from Queen's Park, Chester, the following, referring to our article with the above title, published a few weeks ago:

"I have read with great interest the excellent article you have this week quoted from the *Railroad Gazette*. Editors of scientific or of technical journals are not the only victims of uneducated inventors. Consulting engineers suffer quite as much, with the additional nuisance of being modestly requested to join with the inventors in helping them to develop their schemes, and even to put money into them, while they modestly intimate that reward and re-imbursement will be contingent on the success of the venture.

"If inventors, when they came to consult or seek the help of experts, would only take the advice of men who have gone through years of sound scientific training, and have daily to contend with practical constructive difficulties, as well as the ordinary rules of public requirements, there would be some hope for them; but amateur inventors are deaf to such things. Sometimes they possess some rudimentary ideas of mere line drawing; if not, they employ some one who has, and they come to their victim's office armed often with a batch of drawings calculated to make the stoutest heart quail, accompanied with a formidable roll of closely-written foolscap. Through this mass of paper they modestly request their victim to wade with them, and nothing but abrupt measures, distasteful to any gentleman to resort to, will avert the useless task. I have had many cases of this kind, and have always found it vain to reason, chiefly because my visitors had no mechanical, scientific or commercial ideas to appeal to. To observe that the cores of such or such a casting could not be drawn, or that others would 'wash out' in pouring; that bolts as shown could not be put into the holes, or spanners got on the nuts, or, if got on, could not be turned; that the strains on such a part would probably be four or five times in excess of the ultimate strength of the material; that no earthly smith could make such or such a forging: all these rudimentary practical questions were to be 'overcome somehow.' Then for scientific laws, of the theoretical duty of fuel, natural wind or water power; of the most ordinary principles of matter and motion; I found only the densest ignorance. As to commerce, the question of how this particular contrivance was to be acceptable to the public? how it could enter the lists of keen competition against old and well-approved schemes? these were met with the reply that, once brought before the world, my fortune was made. Men project pumps to lift four times their theoretical quantity of water at half the cost for power. One party came to me with a self-working machine to compress air! He told me he had got the working drawings out, and was having a machine made at a cost of some hundreds of pounds. It was quite vain for me to urge on him that in a machine of the kind he must consume fuel for the generation of heat. He left me in great dudgeon, thinking me most ungrateful, as he had given me the first offer of a thing that would realize thousands of pounds. Again, see the sufferings of patent agents who, as honest, honorable men, have to turn away business from themselves because they cannot conscientiously consent in many cases to become parties to the madness of their would-be clients. It would, indeed, be well if a patent law could be so devised as to keep all but qualified practitioners from pursuing the 'art and mystery of inventing.'"

Contributions.

Russian Contract of the Baldwin Locomotive Works.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Messrs. Burnham, Parry, Williams & Co. have just received a letter from their St. Petersburg correspondent expressing surprise and gratification at the prompt fulfillment of their contract with the Russian Government for the locomotives which are now almost at their destination. He says that the agents of the other foreign factories which had part of the order which was given out when the Baldwin Works received theirs, deny the possibility of the American shops having filled theirs in so short a time, and insist upon it that they have either sublet the contract or have sent old engines in place of the new machines which the contract called for. Of course, any such a supposition as this is ridiculous, but it shows how far superior are the facilities on this side of the water for undertaking such an enormous contract. The delivery of forty engines in the time stipulated undoubtedly was the greatest feat of engine-building ever done in the world, and one which could have been accomplished nowhere except at the Baldwin Works.

The company received the first intimation that the contract was to be given out in October, when a letter from their agent in St. Petersburg informed them that the Government wanted about 125 new locomotives for the opening of spring to replace those worn out during the war. Mr. Parry, of the firm, who has the general superintendence of the shops, at once sailed for Europe, and arrived at St. Petersburg on the 10th of November. The only question was as to the terms of payment, and that was settled satisfactorily. There was a very strong opposition from a French manufactory which was to build 25 and from two German works which contracted for the same number, against the American makers being allowed to take a contract for forty. But the Baldwin shops had done work for the Czar before, and the Government had no doubt of their capacity for carrying out any contract that they would make; and the result was that Mr. Parry took the order for the forty, the other three works being given twenty-five each.

Late on Saturday, Dec. 15, came a cable dispatch from Mr. Parry, saying "Go ahead." The following Monday morning found hundreds of skillful mechanics at the doors on the lookout for a job, and on that morning a telegram was sent to Huston, Penrose & Co., Coatesville, for boiler plate, and to J. L. Bailey & Co., Pine Iron Works, in Berks County, for the same, also to Park Brothers & Co., Pittsburgh, for steel plates. An order was also sent to the Otis Iron & Steel Co., of Cleveland, for steel plates. In anticipation of the job the works had been put in thorough repair, and an

old blacksmith shop which had not been in use since the war was re-furnished. Men had also been taken on as fast as they applied, and they came quite fast enough, until in January the number employed reached 2,400, or about 1,300 more than they had a month before. The first car-load of steel plates arrived from Pittsburgh on the 24th, and on the next day came a load of fire-box material from Coatesville. In three weeks from the time the contract had been entered, four boilers were completed and the other work progressed with them. In the fourth week twelve more were done, in the fifth ten more; in the sixth, eleven; and the last of the forty in seven weeks. The first engine was put under steam on the fifth of January, and the last Feb. 9. The first was finished on Jan. 11, or ess than three weeks' working time, and the last on the 13th of February. During this time 29 other locomotives were delivered to 25 different parties, making 69 locomotives delivered in 58 days, Sundays and holidays included.

These engines were similar to those furnished by the Baldwin Works to the Voronej-Rostoff Railway in 1872, which was the first order they received from Russia. After this they sent in 1873 nine locomotives to the Hango-Hyvinge Railroad of Finland, and in 1874, twelve to the Charkoff-Nicolaieff Railway. Of the forty now on their way to their destination, 24 are soft-coal burners for the Kursk-Charcow-Azoff Railway, and sixteen anthracite burners for the Orel-Griazi Railway. They are of the Mogul pattern, cylinders 19 by 24, with three pairs of driving-wheels, 5½ feet in diameter, and a pony truck. They weigh about 83,000 lbs. They are built on the American system throughout, with cast-iron chilled wheels, iron boilers and flues and steel fire-boxes.

Some idea of the closeness with which the contract has been figured may be gained from the fact that the com pany is not yet certain of a clear profit. They have sent over twenty men to set the engines up and run them, and the contract is not completed until the engines have run long enough to satisfy the Government engineers of their perfection. The freight alone cost $50,000, to say nothing of cable telegraphing every day during the progress of the contract.

The most important contract that the works have now on hand is one for the New York Elevated Railroad. Five of these are of the same pattern as those now in use, four-wheelers, with tank on boiler. They are outside connected, having cylinders 10 inches in diameter, 14 inches stroke, and 38-inch driving wheels, six feet between centres. Each will have a tank capacity of 350 gallons, and is estimated to weigh, in working order, about 22,000 lbs. Five others are building on the Forney plan. This style of engine has not yet come into general use, but in the opinion of the manufacturers will be a very serviceable machine. They will have four driving wheels, 38 in. in diameter, spread five feet under the boiler, and a four-wheeled swinging bolster truck under an extension of the engine frames at the back end, carrying the water tank, with space for coal. The boiler and cylinders will be of the same dimensions as in the other engines; the total wheel base 15 feet and the total weight of each engine in working order about 26,000 lbs. In all the engines steel will be used as far as possible in their construction, the boilers, axles, connecting and parallel rods, tires and wrist-pins will be of steel, and the truck wheels will be steel-tired, thus securing the maximum of strength with the minimum of weight. All the important parts are made to gauges, and accurately interchangeable between different engines of the same class. They will be delivered in about two months. R. W. M.

Specifications of Passenger Station at Newark, Delaware.

The following specifications were received after our first page had gone to press:

The building will have ladies' and gentlemen's waiting rooms, office and baggage room, kitchen, cellar, bed-rooms and sitting room.

The cellar to be 7 feet deep in clear below floor joists.

The foundation walls under 13 in. brick walls to be 20 in. wide; under all other walls, 16 in. wide. The cellar walls to extend at least 6 in. below the bottom of cellar. All other walls at least four feet deep. In all cases walls are to extend to good hard bottom. All foundation stones to be good large stones, laid on their natural beds, well bonded and set solid in best mortar. Trenches to be filled in with earth and solidly rammed around walls.

The base course, door and window sills throughout to be of best Port Deposit granite. The base courses to be axe-dressed, to a smooth and even surface and uniform color. Air spaces to be left where shown. The door sills and window sills to be bush hammered, eight cut. All corbels for brackets to be of Connecticut brown stone throughout. The curbing around pavement to be of Port Deposit granite.

The outside of walls to be faced up with best quality, uniform, selected back-front stretches, laid in neatest manner and joints struck. Backing up of good hard brick. Salmon brick may be used in filling in. Run belt courses of black where shown; to be of good quality pressed brick, heated and dipped in boiling tar. Between courses of black brick run course laid herring-bone pattern. Other belt courses and panels where shown on drawing to be laid saw tooth pattern.

All arches over doors and windows throughout, except in kitchen, to be pointed arches. All brick in arches to be moulded or rubbed to pattern to fit radius of arch. Full sizes will be given.

All brick work to be laid with joints not to exceed ⅛ inch in thickness. All exterior walls of building to be laid up in black mortar composed of lime, cement and lamp-black, in proper proportions to produce the desired effect.

Pavement 10 ft. wide to be built entirely around waiting-rooms, to be laid with best paving brick with an inclination of 3 in, from building to curb.

The floor joists on first floor to be of hemlock 3 × 12 in., and 16 in. on centres. The joists on second floor to be 3 × 10 in., 16 in. on centres, and to be bridged with two rows of cross bridging. All joists to be carefully backed and to have solid bearings on walls. All joists to be double under partitions.

Studding 3×4 in., and 3×6 in. placed for four nailings to a lath, truss over all openings; double at doors; set free, plumb and straight, twice bridged with angular plank bridging.

All floors to be covered with first quality Georgia pine flooring, entirely free from sap, not over 4 in. in width; tongued and grooved, tightly strained and face-nailed, carefully smoothed and planed.

Wall plates, 5×8 in.; rafters, 3×8 in., 3 ft. on centres; ridge pieces. 4×10 in.; hip rafters, 4×10 in.; ridge pieces of dormers, 2×8 in.; rafters of dormers, 2×6 in., 3 ft. on centres; rafter ties, 2×8 in., placed to form ceilings in chambers, etc., 9 ft. 6 in. high. Rafters to be double at dormers. All to be of first quality, dry, sound hemlock.

The roof to be covered with dry, sound 1 in. hemlock roofing boards, well nailed, to present a smooth and even surface to the tin and slate.

All the doors, door and window frames and sash to be of the very best quality of white pine. Window frames throughout, except in dormers, to be box frames of forms and sizes shown, arched heads to be built. Frames to have double pockets and parting strips extending from pulleys to sills. Sash to be 1⅛ in. in thickness, made for one light to each sash, of sizes shown, double hung, with suitable size sash cord and japanned pulleys to cast-iron weights.

Sash in dormers to be 2 in. thick, securely dowelled to door sills.

Outside doors of waiting-rooms to be double, 2¼ in. thick, finished as shown in drawings, the upper panels of glass.

Outside door in entry and kitchen 1⅛ in. thick.

Transom over outside doors stationary.

Inside doors in waiting-rooms to be 3 × 8 ft. × 1¾ in., with transom movable. Size of glass in transom 18 in. in depth.

All doors to be hung with three butts to each flap. All inside doors of dwelling to be 2 ft. 8 in. × 7 ft. 6 in. × 1⅜ in.

The wainscoting in waiting-rooms, ticket office and baggage-room to be 3 ft. 6 in. high, of vertical boards of white pine, tongued, grooved and beaded, of uniform width of 3 in.; base and moulding 10 in. high, and handsome moulding on top.

Architraves around doors and windows in waiting-rooms, etc., to be 7 in. in width, of plain moulding. Architraves around doors and windows in dwelling to be 5 in. in width.

Finish around ticket windows 5 in. wide. All inside finish to be of best quality well-seasoned white pine, securely fastened to grounds and put up after plastering.

All materials used in brackets, gables, etc., to be of very best well-seasoned white pine, free from knots. Roofing of piazza to be, first, best Georgia pine, tongued, grooved and beaded, uniform width of 3 in., then 1 in. hemlock roofing boards.

Provide all ridge and corner beads of roof of wood, as shown on drawings. All arched heads of windows will show square finish on inside of rooms.

The carpenter is to provide materials, do all work and jobbing required to make the building complete in every respect, whether such work is specified herein or not, and in every respect satisfactory.

Washboards to be provided in all rooms, entries, etc., rim wainscoted 10 in. high.

Black-walnut newel posts, hand rail and balusters, of neat pattern, to be provided and placed. All ceilings in second story to be stripped with 1⅝ in. × 3 in. strips, placed for four nailings to a lath.

The roof of building and piazza to be covered with the best quality of black Peach Bottom slate, 7 in. wide, with 2 in. lap; exposed face, 6 in.; two galvanized nails to each slate. All cheeks of dormers to be slated with the best quality of red slate. All to be laid in best roofing felt.

All ridges, hips and valleys to be flashed and eaves and gutters carefully lined up with best IX tin, carefully painted three coats, two on upper and one on lower side. Four tin rain conductors 3 in. diameter to be provided and placed as directed. Contractors to be responsible for the tightness and completeness of the roof for one year after the completion of the building.

Walls and ceilings to be lathed and plastered in the best three-coat work. Walls sand finished in waiting-rooms and telegraph office. Ceilings finished with white coat throughout. Walls of dwelling finished white coat. Run small stucco cornice around waiting-rooms and telegraph office. Slate over all flues in partitions. Plaster to be left perfectly free from cracks, blisters, etc. All laths to be sound and well seasoned.

All wood work not otherwise specified to be prepared, putty-stopped and painted with three coats of best lead and oil put on in three tints, as desired. The ceiling of piazza to be oiled with three coats and shellacked. The cresting to be painted and balls and leaves to be touched out as directed in gilt. All tin work to be painted in three coats, two on upper and one on lower side.

Glass in waiting-rooms and telegraph office to be best double-thick American. Remaining glass in dwelling best single-thick American.

New Jersey Railroad Law.

An act passed by the late Legislature of New Jersey authorizes railroad companies to build lines intended to shorten or straighten their present roads, or to connect two points thereon by a cut-off or short line, and gives the same power to condemn lands, etc., as was given for the original construction of the road. Provided that no such power to condemn or to construct short lines shall be taken to authorize condemnation of lands or new construction within the limits of an incorporated city. In any case where a new company has been organized under the general law to build any cut-off or short line, such company may transfer its franchises and any property it may have acquired to the company whose line it was intended to shorten or improve.

RAILROAD EARNINGS IN MARCH.

Name of Road.	Mileage.					Earnings.					Earnings per Mile.	
	1878.	1877.	Inc.	Dec.	Per c.	1878.	1877.	Increase.	Decrease.	Per c.	1878.	1877.
Atchison, Topeka & Santa Fe	786	711	75	.....	10.5	$306,000	$189,130	$116,870	.....	61.8	$389	$266
Baltimore & Ohio, Main Stem and Branches	562	562	.....	.....	.....	1,137,414	1,092,994	44,420	.....	4.1	2,024	1,945
Burl'gton, Ced. Rapids & North.	424	368	56	.....	15.2	125,141	73,194	51,947	.....	71.0	295	199
Cairo & St. Louis	146	146	.....	.....	.....	18,753	20,687	.....	$1,934	9.3	128	142
Central Pacific	1,878	1,660	218	.....	13.1	1,224,410	1,245,373	.....	20,963	1.7	652	750
Chicago & Alton	678	678	.....	.....	.....	357,477	345,454	12,023	.....	3.5	527	510
Chicago, Milwaukee & St. Paul.	1,414	1,402	12	.....	0.9	663,000	468,570	194,430	.....	41.5	469	334
Cleveland, Mt. Vernon & Del.	157	157	.....	.....	.....	30,659	29,426	1,233	.....	4.2	195	187
Dakota Southern	78	78	.....	.....	.....	16,968	12,607	4,361	.....	34.6	218	162
Denver & Rio Grande	304	269	35	.....	13.0	64,257	49,219	15,038	.....	30.6	309	183
Illinois Central, Illinois lines	819	707	112	.....	15.8	412,223	363,124	49,099	.....	13.5	503	514
" " Iowa lines	402	402	.....	.....	.....	130,248	113,978	16,270	.....	14.3	324	284
Indianapolis, Bl'm'gton & West.	343	343	.....	.....	.....	118,350	90,474	27,876	.....	30.8	345	264
International & Great Northern	516	516	.....	.....	.....	103,084	112,037	.....	8,953	8.0	200	217
Kansas Pacific	673	673	.....	.....	.....	275,282	230,284	44,998	.....	19.5	409	342
Michigan Central	804	804	.....	.....	.....	578,432	534,213	44,219	.....	8.3	719	664
Missouri, Kansas & Texas	786	786	.....	.....	.....	236,546	247,505	.....	10,959	4.4	301	315
Missouri Pacific	426	426	.....	.....	.....	362,772	330,130	32,642	.....	9.9	852	775
Nash'lle, Chattan'ga & St. Louis	349	341	8	.....	2.3	143,257	139,576	3,681	.....	2.6	410	409
Paducah & Elizabethtown	185	185	.....	.....	.....	26,734	28,727	.....	1,993	6.9	145	155
Paducah & Memphis	115	115	.....	.....	.....	18,462	14,385	4,077	.....	28.3	161	125
St. Louis, Alton & Terre Haute, Belleville Line	71	71	.....	.....	.....	37,744	43,450	.....	5,706	13.1	532	612
St. Louis, Iron Mt. & Southern	685	685	.....	.....	.....	349,900	350,778	.....	878	0.2	511	512
St. Louis, Kansas City & North'n	530	530	.....	.....	.....	299,825	279,118	20,707	.....	7.4	566	527
St. Louis & San Francisco	328	328	.....	.....	.....	99,616	110,733	.....	11,117	10.0	303	337
St. Louis & Southeastern	354	354	.....	.....	.....	93,209	81,307	11,902	.....	14.6	263	230
Southern Minnesota	170	170	.....	.....	.....	56,992	36,929	20,063	.....	54.4	335	217
Toledo, Peoria & Warsaw	237	237	.....	.....	.....	108,845	84,220	24,625	.....	29.2	459	309
Wabash	688	628	60	.....	9.6	367,755	326,689	41,066	.....	12.6	537	520
Totals	14,908	14,332	576	.....	.....	$7,733,355	$7,044,311	$781,547	62,403	.....	$521	$492
Total increase	.....	.....	576	.....	4.0	.....	.....	719,044	.....	10.2	.....	.....

RAILROAD EARNINGS, THREE MONTHS ENDING MARCH 31.

Name of Road.	Mileage.					Earnings.					Earnings Per Mile.				
	1878.	1877.	Inc	Dec	P.c.	1878.	1877.	Increase.	Decrease.	P. c.	1878.	1877.	Inc.	Dec.	P. c.
Atchison, Top. & S. Fe.	786	711	75	....	10.5	$862,500	$460,344	$202,156	.....	43.9	$843	$647	$196	.....	30.3
Burlington, Ced. Rapids & Northern	424	368	56	....	15.2	437,749	215,252	222,497	.....	103.3	1,032	585	447	.....	76.4
Cairo & St. Louis	146	146	.....	....	.....	42,768	60,904	.....	$18,196	29.8	293	418	.....	$125	29.8
Central Pacific	1,878	1,660	218	....	13.1	3,323,410	3,361,159	.....	37,749	1.1	1,770	2,025	.....	255	12.6
Chicago & Alton	678	678	.....	....	.....	958,737	1,022,109	.....	63,372	6.2	1,414	1,508	.....	94	6.2
Chicago, Mil. & St. Paul.	1,404	1,402	12	....	0.9	2,037,000	1,248,005	788,995	.....	63.2	1,441	890	551	.....	61.9
Cleveland, Mt. V. & Del.	157	157	.....	....	.....	87,027	81,571	5,456	.....	6.7	554	520	34	.....	6.7
Dakota Southern	78	78	.....	....	.....	47,630	30,571	17,059	.....	55.7	611	392	219	.....	55.7
Denver & Rio Grande	304	269	35	....	13.0	179,448	131,259	48,189	.....	36.7	590	488	102	.....	20.9
Grand Trunk	1,389	1,389	.....	....	.....	2,298,144	2,108,739	189,405	.....	9.0	1,655	1,517	138	.....	9.0
Great West. of Canada	511	511	.....	....	.....	1,160,538	925,592	243,936	.....	26.4	2,289	1,811	478	.....	26.4
Illinois Cen., Ill. lines	819	707	112	....	15.8	1,252,137	1,089,391	162,746	.....	14.9	1,529	1,541	.....	12	0.8
" Iowa lines	402	402	.....	....	.....	383,041	307,490	75,551	.....	24.6	953	765	188	.....	24.8
Ind., Bloom. & Western	343	343	.....	....	.....	331,828	275,818	56,010	.....	20.3	967	804	163	.....	20.3
International & Gt. Nor.	516	516	.....	....	.....	348,518	422,723	.....	74,205	17.6	675	819	.....	144	17.6
Kansas Pacific	673	673	.....	....	.....	637,733	587,643	50,090	.....	8.5	948	873	75	.....	8.1
Michigan Central	804	804	.....	....	.....	1,632,445	1,510,737	121,708	.....	8.1	2,030	1,879	151	.....	8.1
Missouri, Kan. & Tex.	786	786	.....	....	.....	634,693	719,846	.....	85,153	11.8	807	916	.....	109	11.8
Missouri Pacific	426	426	.....	....	.....	938,127	861,372	76,755	.....	8.9	2,202	2,022	180	.....	8.9
Nashville, Chat. & St. L.	349	341	8	....	2.3	476,834	438,536	38,298	.....	8.7	1,366	1,286	80	.....	6.2
Paducah & Memphis	115	115	.....	....	.....	52,623	45,003	7,620	.....	16.9	458	391	67	.....	16.9
St. Louis, Alton & T. H. (Belleville Line)	71	71	.....	....	.....	112,594	131,609	.....	19,015	14.4	1,586	1,854	.....	268	14.4
St. Louis, Iron Mt. & So.	685	685	.....	....	.....	1,081,200	1,080,388	812	.....	0.1	1,578	1,577	1	.....	0.1
St. Louis, K. C. & Nor.	530	530	.....	....	.....	799,158	751,463	47,695	.....	6.3	1,508	1,418	90	.....	6.3
St. Louis & San Fran.	328	328	.....	....	.....	279,303	318,934	.....	39,631	12.4	852	972	.....	120	12.4
St. Louis & Southeast'n	354	354	.....	....	.....	261,901	252,328	9,573	.....	3.8	740	716	24	.....	3.8
Southern Minnesota	170	170	.....	....	.....	178,767	104,494	74,273	.....	71.1	1,052	615	437	.....	71.1
Toledo, Peoria & War.	237	237	.....	....	.....	334,189	243,369	90,820	.....	37.3	1,410	1,027	383	.....	37.3
Wabash	688	628	60	....	9.6	1,049,310	959,046	90,264	.....	9.4	1,525	1,527	.....	2	0.1
Totals	16,061	15,485	576	....	.....	$22,028,342	$19,745,755	$2,619,908	$337,321	.....	$1,372	$1,275	$97	.....	7.6
Total increase	.....	.....	576	....	3.7	.....	.....	2,282,587	.....	11.6	.....	.....	.....	.....	.....

RAILROAD GAZETTE

Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

CONTENTS.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

BRAKE-SHOES.

Attention has been called a number of times to the indefiniteness and lack of precision in the existing knowledge of many subjects relating to the operation of railroads. This is not only true of those subjects which are of a merely theoretical and scientific importance, but it also applies to other matters of a more practical character.

Any one who will take the pains to search for information and thus determine which is the best material for car brake-shoes will find that that subject affords an excellent illustration of what has been said. At present they are made of four or five different kinds of material. Wood is, we believe, still extensively employed for that purpose in Europe, but has gone almost entirely out of use here. Then there are cast-iron, "malleable"-iron, wrought-iron and steel brake-shoes, and others combined of both wrought and cast-iron, as patented by Mr. Congdon, of the Union Pacific Railroad.

Wooden shoes, it is said, would be the best were it not for the fact that they heat when applied for a considerable time continuously and take fire, which makes their use impracticable, especially on roads with long grades.

Wrought-iron shoes are reported to wear from two to six times as long as cast-iron shoes, but on the other hand the cast iron is the cheaper of the two, and it is also said will "hold" on a wheel better than wrought iron, although about the latter there is great difference of opinion. There can be no doubt about the fact, though, that wrought iron when subject to friction under very great pressure is hardened on its surface. Owing to this, it is claimed that a much greater pressure of the brakes is required to "hold" a wheel, or, in other words, to produce an equal amount of friction with a wrought-iron shoe than with one of cast iron, and that this greater pressure produces more heat and consequently more injury to the wheels. Although this impression seems to be very common, yet it must be confessed that it rests apparently on little else besides mere casual observation, and not, so far as we know, upon any exact deductions or data. With reference to the relative wear, there is also great difference of opinion; but there can be no doubt that the wrought-iron shoes wear much longer than those made of cast iron.

Of the "malleable"-iron shoes we have little information; they were extensively used on the Pennsylvania Railroad, but we are told that their use has since been abandoned.

Steel shoes have been introduced to a limited extent in this country, and are extensively used in Europe. Visitors at the Centennial interested in such matters will remember seeing some excellent specimens of cast-steel shoes exhibited by some German establishment. We have, however, no data at all of the wear or service performed by such shoes.

Lately Mr. Congdon's new brake-shoe which was illustrated in the *Railroad Gazette* of Aug. 31, 1877, page 398, has been extensively introduced in this country, and has lately been the subject of some interesting experiments.

As has been said before, about all that is known with absolute certainty is that wrought-iron shoes will wear very much longer than cast-iron. To what extent the case-hardening effect take place, and what its exact influence is upon the adhesion to the wheel, and to what extent the pressure on the shoe must be increased on that account, are matters about which the opinions of people unsustained by any confirmatory evidence must be accepted. It is also said that owing to the want of uniformity in the material of which cast-iron shoes are made, and the fact that the case-hardened surface of the wrought iron is at times worn away, the adhesion of both kinds of shoes varies very much with different conditions, at times being quite insufficient and at others so great as to lock and slide the wheels. These alleged facts are, however, still very much a matter of opinion and dependent upon mere casual observation, which is always a very treacherous guide. For all of these evils it is said that the combined shoe provides a remedy, and that "critical examination at various stages of wear develop the fact that the *wrought-iron sections do not change their structure* by use, but always present to the surface of the wheel the same power of adhesion, offering the required resistance instantly upon their application by the brake. If it is the cast-iron portion of the shoe which prevents change of structure in the wrought iron (as seems to be the case), by reason of numberless granular particles of the former being detached by contact with the revolving wheel, and by its action carried to the wrought iron, mingling with and forming a part of the surface of the latter, thereby preventing case-hardening, when the brake is thrown off, then it is obvious that this combined surface which seems peculiarly adapted to the wants required in bringing a train to rest, prevents the cast iron from so quickly wearing away, and arrests the rapid destruction which occurs in shoes made entirely of cast iron."

With reference to the relative endurance of the combined and cast-iron shoes, some very careful experiments have been made. On the Long Island Railroad one truck of a passenger car in use on a local train was equipped with combined and the other with cast-iron shoes. The cast-iron shoes were renewed seven times before the others were worn out. On the Chicago & Northwestern road one of these combined shoes was applied to one of the driving-wheels of a switching engine and wore out five cast-iron shoes on the other driving wheels. On the Chicago, Burlington & Quincy Railroad four cast-iron and four of the combined shoes were put under the same car. In running 6,120 miles and making about 4,600 stops the cast-iron shoes lost 32½ pounds in weight and the combined shoe 4 pounds. On the New York Elevated Railroad a set of the combined shoes ran 25,875 miles and made 74,000 stops. The Superintendent says that the ordinary mileage of cast-iron shoes is about 2,400 miles. The cars on this road are, however, very light, but the stops are very frequent—one stop in nearly every third of a mile.

Such experiments as these, if carefully and fairly made, give some accurate data from which an intelligent opinion can be formed of the relative endurance of the two kinds of shoes. Some similar experiments have been made with wrought-iron and combined shoes. We regret that we are not able to give a report of the results of these, but we have been informed that the experiments indicate that the combined shoes will wear twice as long as those of wrought iron, It is said, too, that wrought-iron shoes are more injurious to the wheels than either cast or combined shoes, owing, doubtless, to the greater heat generated by reason of the increased pressure necessary. The effect of the shoes, at any rate, is said to be to cut the thread of the wheel by a sort of abrasive action. A record of the mileage of wheels working under exactly the same conditions, but provided with different kinds of brake-shoes, would indicate their effect on the wear of the wheels; but, in order to get at a correct average it would be necessary to try it on a somewhat extended scale.

It seems surprising sometimes, considering how much desire for knowledge is manifested by master mechanics and master car-builders at their conventions, that more experiments of this kind are not made. They involve little labor or consumption of time; only a little careful observation and recording of what is observed. Brief reports of intelligent investigations of this kind would have very great value and would do much to establish the reputation of the experimenter, and upon his reputation his future success will be largely dependent. As it is now, most of the really valuable investigations and experiments are made or instituted by those having an interest in some invention or manufactory.

NORTHWESTERN GRAIN RECEIPTS.

We conclude our study of the grain movement of 1877 and previous years by an investigation and comparison of the receipts of the leading Northwestern grain markets. This is a branch of the subject which we have not taken up before. The receipts and exports of the Atlantic ports, and the movement by different routes to New York, to which we have invited attention in the three numbers preceding this, we treated in a similar way last year, and have often considered at other times.

Here again the material for our study is found in the report of Mr. E. H. Walker, Statistician of the New York Produce Exchange. It is not in all respects so complete as is desirable, and it is proper to note that the "eight markets," whose receipts are here considered, are not the same eight markets whose receipts and shipments are reported weekly to the New York Produce Exchange, and published in the *Produce Exchange Weekly*, and copied into this paper and many others. The weekly reports cover the business of Duluth and Cleveland, for which here are substituted Kansas City and Cincinnati. Mr. Walker's annual report gives Duluth and Cleveland receipts for two years only, and the latter only by lake, which are altogether insignificant. Duluth receipts, too, are unimportant—only about 3,000,000 in 1876 and 1877. Cincinnati and Kansas City receipts are much greater.

The omission in these tables which is most to be regretted is that of Indianapolis receipts. This is really a misnomer, for the grain credited to that city consists, almost entirely of grain in transit, which is not sold or discharged at Indianapolis, but there passes from one railroad to another in the cars in which it was originally loaded. For two years we have the figures for such Indianapolis "receipts," excluding everything which passed through Indianapolis but had been credited before to one of the other markets. A large part of the St. Louis shipments, and a share of the Kansas City and Peoria shipments, pass through Indianapolis, and if credited to it would count twice in the totals. Generally the Statistician has endeavored to credit as the receipts of a city all that passes through it which has not been already credited to some other market. Thus, shipments from Milwaukee by way of Chicago are not counted with Chicago receipts.

It would, perhaps, have been proper in studying the grain movement to consider the Northwestern receipts first instead of last. These markets are the primary markets. They collect the grain directly from the farmer or from the farmer's station; the grain arriving at them has made its first step from the producer to the consumer. Formerly nearly all the grain arriving at the seaboard was first sold at one of them. Latterly this has not been so much the case, on account of the increase in through rail shipments. It is true that a large part of these through rail shipments passes through one of these markets, and so may be recorded there, but there is now a great system of railroads which may find an outlet to the East without passing through any of the markets named. This it is which makes it so desirable to have the movement through Indianapolis. Probably most of the grain which escapes record at any of the eight markets named passes by way of Indianapolis, and a record of the amount there passing for the past ten years would give some clue to the extent of the growth of through rail shipments.

In order to make our record as complete as possible, we give below a table of receipts, including those of Indianapolis, Duluth and Cleveland (the latter by lake only) for the two years for which they are given, as well as those for the past six years from the eight mar-

kets included in our diagrams. The figures here are for millions of bushels:

Receipts of Grain at Northwestern Markets.

	1872.	1873.	1874.	1875.	1876.	1877.	Total.
Chicago	80.2	100.2	96.9	82.4	99.2	95.8	**563.7**
Milwaukee	23.4	38.8	37.8	39.4	33.5	34.0	**206.9**
St. Louis	28.9	27.1	30.4	27.5	34.2	29.7	**177.8**
Toledo	22.7	24.1	39.3	14.2	18.5	28.6	**147.4**
Peoria	10.9	10.8	10.5	13.6	14.4	10.2	**70.4**
Cincinnati	8.2	10.1	11.4	11.1	11.8	11.5	**64.1**
Detroit	9.8	9.1	10.3	8.5	8.7	9.6	**56.0**
Kansas City	1.0	1.5	2.3	2.8	5.8	6.7	**20.1**
Total of 8 markets	194.1	221.8	239.0	199.5	226.2	226.1	**1,306.4**
Indianapolis	....	....	.....	.....	25.5	21.9	.....
Duluth	....	.....	.....	.....	3.1	3.2	.....
Cleveland (by lake)	....	.....	.....	.....	0.9	0.8	.....
Total of 11 markets	....	.....	.....	.....	255.7	252.0	.....

The amounts received at the eight markets first named are also represented in Diagram 7, in the manner employed for representing the quantities and percentages in previous articles on the receipts and exports of Atlantic ports, and the receipts of New York by different rates. That is, rectangles of equal height represent the aggregate receipts of the eight markets for the several years, their width being in proportion to the amount of such aggregate receipts. Each of these rectangles is divided into eight smaller rectangles, one for each market, their height varying in proportion with the percentage receipts of such markets. The names are given in the first and last years of the series, and the markets come in the same order, from top to bottom, for the other years. The space is too narrow for the name of Kansas City at the top of the rectangle for 1872, and there and elsewhere it has been necessary to set the figures for the percentages (on the left) and the quantities (on the right) for this place outside of and above its rectangle.

In this diagram Chicago takes the place, or something like the place, occupied by New York in the diagram of Atlantic ports' receipts published three weeks ago. It has received from 82 to 100 million bushels a year and from 41¼ to 46 per cent. of the aggregate receipts of the eight markets. For the whole period of six years it has received 43 per cent. of the aggregate. It is followed, with a long interval, by Milwaukee, which however has been surpassed two years of the six by St. Louis and one by Toledo. Its receipts have varied from 23½ to 35½ millions, and its percentage of the aggregate from 12 to 19¾ per cent.; for the whole six years it has been 15¾ per cent. St. Louis varies less than Milwaukee, receiving from 27 to 34¼ millions, and in the aggregate for the six years 13⅔ per cent. of the total. Toledo receipts have fluctuated more than those of any other market, falling in a single year from 39 to 14 millions. For the whole six years they are as much less than St. Louis receipts as St. Louis receipts are less than Milwaukee's, amounting to 11¼ per cent. of the total. Peoria, Cincinnati and Detroit then follow, with, for the whole six years, 5.4, 4.9, and 4.3 per cent. of the total. Kansas City closes the list, with small but rapidly and constantly increasing receipts, little more than 1½ per cent. of those of the six years, but about 6¾ per cent. of those of the last of the six.

Below the figures are given for the *percentage* of the aggregate receipts of the eight markets arriving each year at each market, being the same as those on the left of the small rectangles:

Percentages of Receipts at each of eight Western Markets for six years.

	1872.	1873.	1874.	1875.	1876.	1877.	Six years.
Chicago	46.0	45.2	40.6	41.3	43.9	42.3	**43.2**
Milwaukee	12.1	17.5	15.8	19.7	14.8	15.0	**15.8**
St. Louis	14.9	12.2	12.7	13.8	15.1	13.2	**13.6**
Toledo	11.7	10.9	16.4	7.1	8.2	12.7	**11.3**
Peoria	5.6	4.9	4.4	6.8	6.4	4.5	**5.4**
Cincinnati	4.2	4.5	4.8	5.6	5.2	5.1	**4.9**
Detroit	5.0	4.1	4.3	4.3	3.8	4.2	**4.3**
Kansas City	0.5	0.7	1.0	1.4	2.6	3.0	**1.5**
Total	100.0	100.0	100.0	100.0	100.0	100.0	**100.0**

No decided tendency is shown by these figures except the increase at Kansas City. The remarkable thing is the steadiness, all things considered, of the relative positions of the several markets. The receipts of the Northwestern markets are affected by many causes which scarcely have any influence on the distribution of receipts among Atlantic ports. All the latter are, substantially, competitors for the grain marketed by the whole Northwest. The competition of the Western markets is not nearly so general. Each of these latter has a district of its own whose grain it is pretty sure of. With large crops in that district it is likely to have large receipts, and if at the same time crops are bad elsewhere, it will have an unusually large proportion of the total receipts. Milwaukee cannot hope for large receipts when there is a bad crop in Wisconsin and Minnesota, however abundant may be that of the States further south. Detroit, again, receives little except Michigan grain. Chicago competes to a greater or less extent with all the other places, but with Milwaukee and even with St. Louis to a much less extent than is commonly supposed. St. Louis, Peoria and Cincinnati are large manufacturers of grain, the former grinding and the two latter distilling largely, and this has a considerable effect on their receipts, the quantity required for manufacture, like that for consumption, not being liable to be diverted

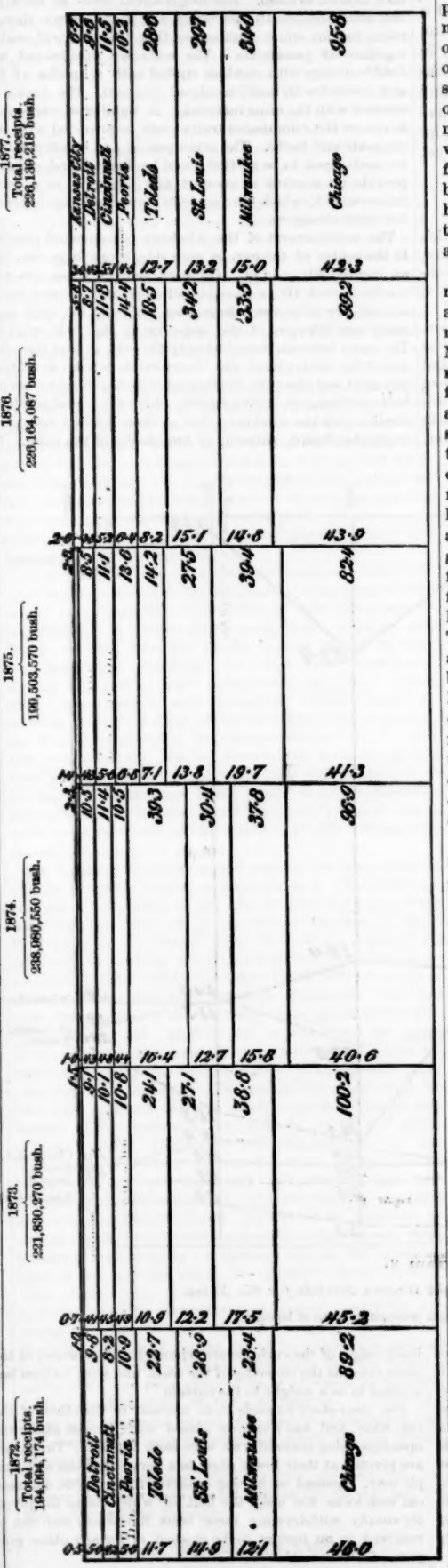


Diagram 7.

Receipts of Grain at Eight Leading Western Markets—Chicago, Milwaukee, St. Louis, Toledo, Peoria, Cincinnati, Detroit and Kansas City—for six years, 1872 to 1877, inclusive.

[The parallelograms of equal height represent each the aggregate receipts of the eight markets for a year. Each of the eight smaller rectangles into which each of these is divided represents the receipts of a single market for that year. The figures on the LEFT represent the PERCENTAGE of the aggregate receipts received at the markets; those on the RIGHT the quantities in millions of bushels.]

to competing markets like that simply bought and forwarded. Chicago and Milwaukee probably manufacture less in proportion, though their breweries use a great deal of barley. The quantity consumed of course depends upon the population of the respective markets; it is considerable at Chicago, St. Louis and Cincinnati, but not elsewhere.

That the receipts do not appear more irregular, in accordance with the abundance or failure of the crops in certain districts, is doubtless due to the fact that they are reported for the calendar year, and so include parts of the crops of two successive years, and thus, in most cases, the want of one year is made up in whole or in part by the greater abundance of the crops of the other year. Milwaukee, for instance, had extremely small receipts from the crops of 1876. But the receipts of 1876, though small, do not by any means reflect the meagreness of the crop of that year in the district which markets at Milwaukee. They were made up from the very good crop of 1875, as well as the very bad one of 1876. The receipts of 1877, on the other hand, fail to represent the abundance of the crop of that year. They were very light from January to July, and very heavy after July.

So far as the business is affected by the carriers, the relative positions of the several places vary with the approximation of rail and water rates. The lake markets have the advantage—especially Chicago and Milwaukee (and Duluth)—when the lake and canal rates are much lower than the rail rates. Then grain from Kansas, Missouri, Southern and Central Illinois, as well as that from Northern Illinois, Iowa, Minnesota and Wisconsin, is likely to go to Lake Michigan to market, in order to reach the East by the cheapest channel. But when rail rates are as low as water rates, the inland Western markets are brought to a level with those on the lakes, so far as their outlets are concerned, and whatever the route taken, the grain is much less likely to be sold, or at least transferred, at a lake port or any other market. And so far as the business of the cities is concerned, it matters little to them how much grain passes *through* them. Their railroads profit by such transit perhaps as much as if the grain was bought, handled and sold there; but Chicago profits no more than Calumet by trains loaded with grain passing through it. The reduction of rail rates to the level of water rates, and the carriage of immense quantities of grain while navigation is closed, as was done last winter, tends to eliminate entirely the Western market, by opening a channel as cheap as any other directly from the Western producer to the Eastern consumer or exporter.

How far this practice has prevailed cannot be ascertained by these reports. As has been said, the receipts of the Western markets are generally intended to include all shipments through them not credited to some other market. And thus, if complete, they would include all Western shipments to the East.

The lack of completeness prevents our knowing just how much grain the Northwest markets, which would be important information. We cannot judge by the receipts at Atlantic ports; for some part (probably not very large,) of these receipts do not come from the Northwest, while, on the other hand, an enormous quantity is sent from the Northwest directly to interior points in the East, and so is not included in the receipts of Atlantic ports. It may be worth while, however, to compare the receipts of these Western markets with those of the seven Atlantic ports, for the same years:

	Receipts at—	
	Western markets.	Atlantic ports.
1872	194,094,174	185,774,160
1873	221,830,270	189,092,703
1874	238,980,550	206,407,486
1875	199,503,570	194,209,846
1876	226,164,087	227,752,173
1877	226,130,218	221,795,040

We see here that the Atlantic receipts are nearly parallel with and equal to the Western receipts, and that they are more nearly equal to them during the last three years than before. We can only infer from this that the Western shipments not included in those of the eight enumerated markets must have been about equal to the interior receipts from the West, *plus* the Eastern seaboard receipts from Eastern States. And the only basis we have for an estimate of any of these is the reported receipts of Duluth, Indianapolis and Cleveland for the past two years, amounting to 29,500,000 and 26,000,000 bushels, respectively.

In concluding this discussion of the grain movement, we will give the figures for the receipts and exports of New Orleans, so far as given in the Produce Exchange Report. They were not included in our diagrams, partly because they are not given for the whole period of years, and partly because the exports, which are the only part for which the other ports can compete, were too small to be clearly represented on diagrams so small in scale as ours. The receipts here given are for the year ending with August; the exports for the calendar years:

Receipts and Shipments of Grain at New Orleans for Six Years.

	Receipts.	Exports.
1872	15,256,805	.....
1873	13,214,226	1,433,278
1874	12,295,333	2,394,470
1875	9,669,296	774,927
1876	9,544,194	2,145,818
1877	10,025,381	3,101,232

The receipts last year were about equal to 5 per cent.

of the receipts of the five Atlantic ports included in our calculations; the exports, to 2½ per cent. of the exports of those ports.

This does not indicate that the New Orleans business may not become an important one; but simply that it has not yet been important. The effect of the improved outlet to the Mississippi began to be felt only in the latter part of 1877. There were for some weeks large receipts there, in the latter part of last year and the first of this, but for the past two months they have been only about the average of last year, and do not indicate that any important diversion of business has yet been effected.

Cars for Gilbert Elevated Railroad.

This company has just received twenty new cars which were built for it at the works of the Pullman Car Company, Detroit. They arrived in New York on last Saturday evening, and as we write are being placed on the elevated track of the Gilbert Company.

When made up into a train they look like juvenile cars. Their size is enough smaller than ordinary cars to be very noticeable, if compared with the latter, and their low wheels and trucks make them look more diminutive than they really are. The bodies are 37 ft. 10 in. long by 8 ft. 9 in. wide. The trucks have paper wheels 28 in. in diameter spread 5 feet, so common in horse cars, and which every man with a wife or daughter ought to be ready to fight about. The effect of this arrangement is that it divides the car in the centre, and will thus lead the passengers at each end to go out at the door nearest to them. The longitudinal seats at each end will accommodate 16 passengers, and in the centre there is room for an equal number, so that the cars will seat altogether 48 passengers. The seats are upholstered with Cobb's springs with cushions stuffed with a species of felt, and covered with maroon-colored morocco. The backs are covered with the same material. A number of cars—those to run on the commission trains—will be provided with rattan seats and backs. The arrangement and construction of the seats seem to be all that could be desired, and certainly provide an amount of comfort and elegance in a public conveyance to which the people in New York have heretofore been strangers.

The arrangement of the windows is somewhat peculiar. In the centre of the car, on each side, is one large one, with an opening 39⅛ × 44 in. On each side of these are twin windows, each 19⅛ × 44. At each end, and on each side of the car, are two more large ones, 35⅛ × 44 in., with single small ones between, of the same size as the twin windows. The space between these is simply the post, so that the whole side of the cars is glazed, and, therefore, the whole car is unusually light and cheerful. Curtains of several different plain patterns are hung on spring rollers, which are placed inside the cornice over the windows. One of these is a very neat plaid, or checker-board, pattern, of two shades of tan color. The

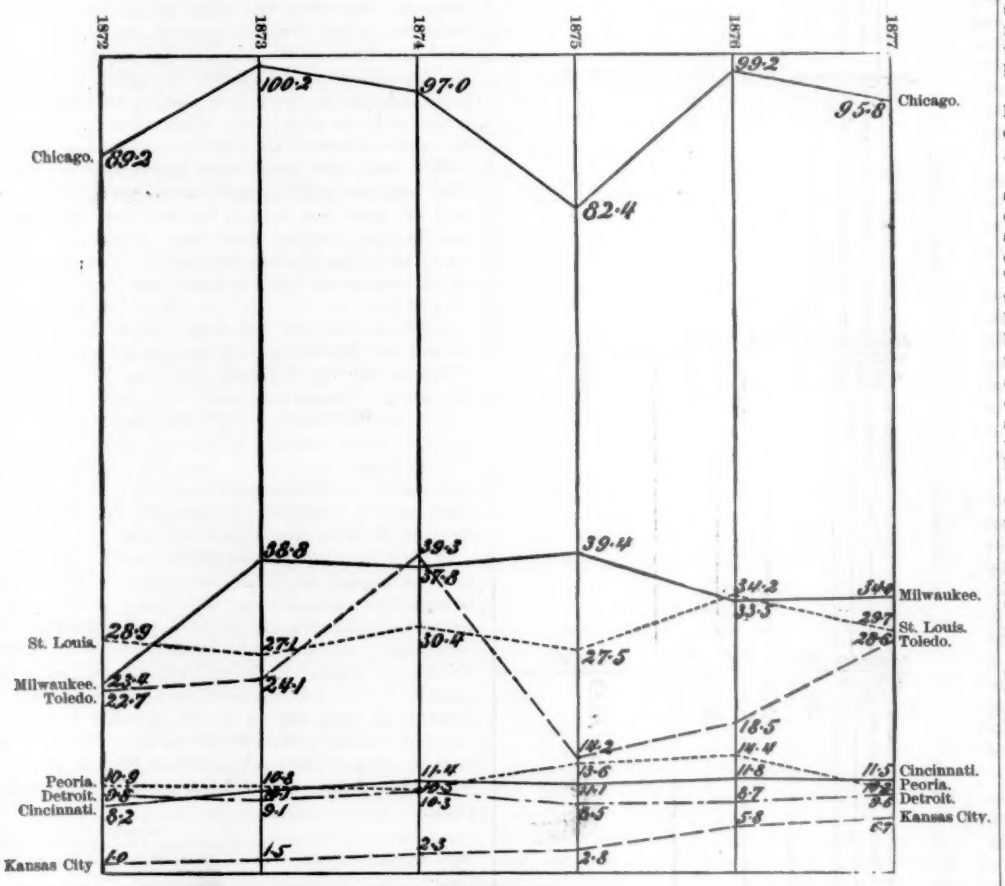


Diagram 8.

Course of Grain Receipts at Eight Western Markets for Six Years.

[The figures at the intersections indicate millions of bushels.]

and the distance from the centre of one truck to the centre of the other is 30 feet. The outside of the bodies and trucks is painted a peculiar light green color which is hard to describe. Someone suggested that it was the color of young green peas, and another poetical individual that it is the shade which would result if the dark hue of Niagara was mixed with the white of its foam. The projecting parts between the panels and windows are painted a darker shade of the same color, and the chamfered edges are painted maroon. The striping and ornamentation are done in a deep shade of green and gold. The painting gives them a very attractive and airy appearance.

The doors and platforms are similar to those in use in ordinary American cars, but the seats are arranged somewhat differently. In the centre of the car there are eight transverse seats of the ordinary kind, excepting that they are not reversible, arranged exactly as they are in a sleeping car when used for day travel. The space occupied by these seats would correspond to four sections of a sleeping car, that is, two on each side of a central aisle. These seats are about five feet from centre to centre, so that it leaves a space of thirteen and a half feet at each end of the car. In these spaces the seats are arranged longitudinally on each side of the car. These, the public will be gratified to learn, are divided into spaces each 19 in. square. The divisions are made of a neat pedestal casting of malleable iron, with a cylindrical mahogany arm rest attached to the top. Its height is not sufficient to prevent ladies' dresses from falling over it, and yet it is quite enough to separate one seat from another, and thus prevent the indecent crowding now

lower edges of the curtains are trimmed with morocco of the same color as the covering of the seats, and with an iron bar worked in as a weight to the curtain.

The clear-story extends from one end to the other of the car body, and has windows glazed with ground glass; the openings being covered with wire-cloth outside. The sashes are pivoted at their lower edge, in a very ingenious and simple way. Instead of having ordinary fixed pivots, common car sash-locks are used, the bolt of which forms the pivot. By simply withdrawing these bolts the whole sash can be removed in an instant to be cleaned, or for any other purpose.

The ceilings of the cars, instead of being covered with the ordinary head-lining, are finished with oak panels, the divisions of which, and all the other wood work, are of mahogany. The panels are decorated in what someone has called the "modern gothic" style. The decorations consist of flowers, plants and arabesques, painted on the panel. This is very beautiful, and the whole interior decoration, while it is quite simple, is in excellent taste, and will mark a new era to the people of New York, who have been accustomed so long to frowsiness and shabbiness in public conveyances.

The bell cords are carried in rings along either side of the clear story, and the end doors each have a sliding sash for ventilation, with a suitable door-holder to keep the door open.

The first-class cars are carpeted with Axminster carpet in the centre, and with rugs made of the same material at each end. It is to be feared, however, that the expectorating habits of the average New York population will make this latter luxury impracticable. If it were only possible for the Gilbert Railroad Company to be authorized to lead out every sinner detected in defiling their carpets, and expose him publicly to a stream of water from a hose pipe, it would not only protect its cars but would become a public benefactor by thus improving the habits and manners of our very mixed population.

The heating apparatus has not yet been put in, and will not be until the autumn.

Baker's heater, described in the *Railroad Gazette* a few weeks ago, will be used.

Each of the cars has three gilt lamps, manufactured by Messrs. Hicks & Smith, of New York. These have each two dual burners which are protected from being blown out by being entirely closed up around the burner, the air for combustion being admitted through a central opening, and the top of each chimney is protected from downward and side drafts by a peculiar jack, whose construction could not be described so as to be understood without an engraving.

The platforms at each end extend 3 ft. 6 in. beyond the car body, and are inclosed in a railing of beautiful design and made to correspond in style to the decoration of the car. The sides of the platforms are inclosed by gates, and these are held either open or shut by a spring placed underneath the floor. It is intended to connect the gates at each end of the car together, so that a brakeman at one end will open those at each end at the same time.

The running gear consists of two four-wheeled trucks, with 28 in. paper wheels. These have wooden frames with six elliptic body springs and two double spiral springs on each equalizing lever. The latter is arranged so that in case of accident from broken wheel or axle, the lever will slide on the guard timbers which have been provided on the track.

The journals of the axles are 3 in. in diameter by 6 in. long, and are without a collar on the ends, and have Bissell's end-bearing or stop wedge, which was illustrated in the *Railroad Gazette* of Oct. 5, 1877.

The draw-bar arrangement is peculiar. Instead of being attached to the car body in the usual way, it is connected directly to the centre pin of the truck. The draw spring is attached to the draw-bar itself by a peculiar sort of telescopic arrangement which enables it to lengthen and shorten. The outer end of the draw-bar is carried on a sector attached to the under side of the platforms. This is necessary because on the short curves (only 90 ft. radius) on the Gilbert line, the lateral movement of the draw-bar will be three feet, or 18 in. on each side of the centre. The coupling arrangement consists of a socket or sheath on the end of the draw-bar, into which a flat bar fits snugly and is secured by an ordinary coupling-pin. The end of the draw-bar is provided with a spring, which bears on the sector and thus holds the coupling bar and prevents it from rattling.

The cars are all equipped with Eames' vacuum brake. This may be described as consisting of a large cast-iron bowl, which is fastened to the truck transoms and covered with a rubber diaphragm. The air is exhausted from this bowl, and, as the diaphragm is connected with the brake levers, when the air is exhausted the brakes are applied. The brake shoes are of the Congdon plan, that is, they are made with pieces of wrought iron cast into a cast-iron shoe.

Altogether the cars are very skillfully designed, if regarded either from a mechanical or esthetic point of view. Their weight is estimated at 22,000 lbs., or 458⅓ lbs. per passenger.

The Michigan Central and the New York Central.

The Michigan Central Company last year was expected by many to come under the management of Mr. Vanderbilt. A considerable proportion of the stock was put into his hands for the election, but there were two other parties in the field, and before the election occurred Mr. Vanderbilt turned over his proxies to the old President, Mr. Samuel Sloan, who was reëlected. There are now indications that another effort will be made at the next election to give Mr. Vanderbilt control of the road. Already a very large share of the stock is committed to him. Whether the present management is anxious to preserve its control does not appear. Apparently it has no interests in other roads which would be furthered by an alliance with the Michigan Central. The latter depends upon the New York Central & Hudson River almost exclusively for its immense New England traffic, and upon that road and the Erie for its New York traffic. There was a time, probably, when the control of the Michigan Central by the New York Central would have been feared as likely to benefit the Lake Shore & Michigan Southern more than the Michigan Central. Probably such fears have now passed away. The roads which are most likely to be affected by such a change of management are those which connect the Michigan Central with the New York Central, that is, the Great Western of Canada, the Canada Southern and the Grand Trunk. The Canada Southern is already a Vanderbilt road, and it has already made considerable inroads upon the traffic which a few years ago the Great Western had all to itself. Usually a railroad commands so much traffic of itself as to make it unwise for any connecting road to ally itself to a rival exclusively. But the case of the Canada roads is a peculiar one. They command no through traffic, or very little, and are dependent for it upon their connections at either end. It is as if there were three bridges between Buffalo and Detroit, it being a matter of comparative indifference which one is used. But, in so far as independent traffic is concerned, doubtless the Great Western has much the strongest position. Not only does its main line command a much larger local traffic than any other between the Niagara and Detroit rivers, but it is the trunk of a system of branches, making

the whole system count up about 800 miles. Then it has recently secured the Detroit & Milwaukee Railroad, 180 miles more across Michigan, a very unprofitable property, which commands a large through traffic, much of the time having the largest part of the Milwaukee business, which in such a year as this is very important, and at all times is able to affect very seriously the rates on most through traffic. Still, doubtless, the traffic received from the Michigan Central forms by far the largest part of the traffic which the Great Western delivers to the New York Central and the Erie at Suspension Bridge and Buffalo, and *vice versa*. And, what makes its friendship less valuable, it is virtually dependent upon the New York Central for an outlet to New England. In case of such a union of the Michigan Central, the Canada Southern and the New York Central as should make of them substantially one road, and secure to the second as against the Great Western the through traffic controlled by the first and last, then the Great Western might retaliate by preferring the Erie to the New York Central for shipments to New York from its own lines; but it could not so well transfer its Boston and New England shipments from the New York Central, and it would have no other connection to Chicago than the Michigan Central. The sum of it is that the Michigan Central and the New York Central are indispensable to the Great Western, or nearly so, but the Great Western is in no respect indispensable to the Michigan Central and the New York Central, though to the latter especially, it may be very useful, chiefly by reason of the Milwaukee business to New York which it will command.

The Grand Trunk can hardly be said to be much interested in the matter, so far as its Buffalo & Detroit line is concerned, for that has never got any considerable share of the through traffic. But, like the Great Western, it has its chief (long its sole) connection with Chicago through the Michigan Central, and the new line from Chicago to Port Huron, whose present name is the Chicago & Northeastern, has not changed matters much.

It would change the circumstances affecting through traffic and rates considerably if the Grand Trunk's chief western connection were managed by the President of the New York Central.

It is not to be assumed, however, that if the President of the New York Central is invited to select a board for the Michigan Central, the latter would be treated as an appendage of the New York Central, or that any sudden or violent change in its relations with other roads would follow. We may, however, be reasonably certain that it would not make any combination or alliance in hostility to the New York Central or the Canada Southern. The Lake Shore, we know, has been under Vanderbilt management for several years, and yet it exchanges large amounts of traffic with a chief rival of the New York Central.

And, speaking of the Erie, we are naturally led to consider the effect on its interests of closer relations between the Michigan Central and the New York Central. No one, we suppose, would consider it favorable. The Erie may not at present be deprived of any traffic which it would otherwise get, but it would be deprived, should the arrangement be permanent, of the chance of securing the only important Western connection left unattached. Certainly with a Vanderbilt management the Michigan Central will never become the Erie's ally. But this has been the dream of people interested in the Erie for years. The Lake Shore being controlled in the interest of the New York Central, it was felt that at some future time their relation might become closer, and the Erie deprived of the chief advantages of that connection. In that case it would need not simply an equal chance on the Michigan Central, but an offensive and defensive alliance with it. It was once thought that the Erie might secure the Canada Southern, and perhaps lease the Michigan Central. Now the Canada Southern is controlled by the New York Central instead, and there is at least a chance that the Michigan Central may go there too, and, we suppose we may say, scarcely any chance that the Erie will ever have either of them. It will then have as its sole Western connections, over which it can have any control, the lake steamers and the Atlantic & Great Western, which are good, so far as they go, but hardly go far enough for a great trunk line which must compete with the New York Central on one side, and the Pennsylvania on the other. And even the Atlantic & Great Western is not safe for the Erie, but may possibly some day make a connection with the New York Central also.

We thus see that the placing of the Michigan Central under the management of Mr. Vanderbilt may serve the New York Central by cutting off from its rival what might have become a most important ally. Should a close union be effected between the Michigan Central, the Canada Southern and the New York Central, the second would gain very greatly at the expense of the Great Western, the Grand Trunk might suffer somewhat and the Erie a great deal. Putting these roads and the Lake Shore together would make one of the most magnificent railroad systems in the world, with some 3,500 miles of road, and comparable to one of the great French systems. We do not mean to intimate that such a close union is contemplated; but in such a matter it is proper to consider the possible ultimate consequences as well as the probable immediate results of the step. And while we do not suppose that such a close union—by consolidation, lease, or otherwise—is now contemplated; we would not, on the other hand, say that it is not probable, and highly probable, as an ultimate event, whatever the present intentions of those interested. Natural causes, it seems to us, tend to bring about such a combination, and will continue to do so; and however unwilling one or both parties may be to make it, they may at last feel impelled by circumstances to accept it.

The Erie Sale.

Last Wednesday, shortly after noon, the property of the Erie Railway Company was finally sold under the foreclosure of a mortgage. There has been so much litigation in the case, so many delays in the proceedings, and so many days appointed for the sale, that it was not generally expected that the sale would be made this week. The tactics of the parties opposing the reconstruction scheme have been to bring new suits just before the day appointed for the sale which could not possibly be heard fully before the time appointed for the sale. Apparently this might go on for ever. Suits could be brought without number, and if the courts considered it indispensable to hear them fully before permitting the sale, the latter event might never occur.

In the last case the suit was pending on the morning of Wednesday, while the sale was appointed for noon. But the Court decided that whatever merits there might be in the case, the complainants' rights would not necessarily suffer by the sale; that is, that they could prosecute their claims and secure whatever they might be entitled to even if the road should be sold. He therefore refused to postpone the sale, and about one o'clock the Erie Railway and all the property appertaining to it was sold to the highest bidder—the largest property probably that ever was sold at auction.

It remains for the court to confirm the sale. Probably there will be opposition to such confirmation, as there has been to every step in the foreclosure proceedings, but it is not probable that it will be of any avail. Suits may be continued, and new ones brought, doubtless, but the sale probably will stand, and the representatives of the reconstruction committee will probably be able very soon to organize a new company, which will succeed to all the property, and, unfortunately for it, to most of the obligations of the Erie Railway Company, deceased.

It can hardly be said that the new company will enter upon its career under flattering auspices. The company has not for many years been in condition to take advantage of opportunities to secure connections, make alliances and bring its road into the condition and supply it with the appliances requisite for the most economical conduct of traffic; and meanwhile its chief rivals have been active and powerful. They have secured to themselves most of the valuable connections with the West, have provided themselves with the best, or what they considered the best, appliances; and thus on the one hand have threatened to isolate the Erie and deprive it of the share of the through traffic which it might otherwise have got; and on the other have been able to carry with a profit at rates which would hardly meet the working expenses of the Erie.

But another difficulty in the way of the new company will be the large amount of fixed charges. There will be a permanent reduction in the rate of interest on part of the debt, but there will be, in the end, an increase of about $7,000,000 in the funded debt. Interest on a part of the debt will be payable only if earned; but, if our estimates are correct, there will be more than $3,000,000 to be paid in 1878, and somewhat larger amounts thereafter. Now last year the company's net earnings were about $3,900,000. This would not matter so much, but the terms of the reconstruction were arranged expressly to enable the company to pay from net earnings a large amount every year for improvements. The margin last year would not have been sufficient to make much progress with such new works. If the assessments are paid in on all the shares, however, about $5,000,000 will be realized in that way, and this year there is every reason to believe the net earnings will be larger than last. The margin, however, is too close for comfort, especially as the road needs new capital. On the whole, however, the change seems to have been acceptable to the assessed stockholders as well as to the bondholders, for on the announcement of the sale the price rose about 8 per cent. both in New York and London. It was not necessary, however, that the reconstruction scheme should be very strong in order to improve the prospects of the road. It could not but lose ground monthly when in a management which could not make any plans for the future or safely take any steps except such as provided for the immediate necessities of the road and its business. A little more delay and the road might have been permanently isolated and deprived of any considerable benefit from its Western connections.

It seems to be assumed that the new company will have substantially the same management as the old one, and that Mr. Jewett will be President.

The First Quarter's Earnings.

Railroad earnings for the month of March are reported in our table for 29 railroads, with 14,908 miles of road, which is about 18¾ per cent. of the total in operation in the United States, and 4 per cent. more than the same companies worked last year. The total earnings of these 14,908 miles of road last March were $7,763,355, which is 10.2 per cent. more than last year. The earnings per mile increased from $492 to $521, or about 6 per cent. Of the 29 roads, only eight show a decrease in total earnings, and nine in earnings per mile of road. Nine show increases of 20 per cent. and more and three of more than 50 per cent.

Only three of the roads which carry prodzce to Chicago are included in the report. These three have in the aggregate 3,301 miles of road. All show an increase. In the aggregate this increase was 21 per cent. more than the earnings in March last year. Seven roads which carry produce to St. Louis report, with an aggregate of 2,539 miles of road. Three of these show an increase and four a decrease in earnings, and in the aggregate they show an increase of 3.8 per cent.

For the three months ending with March, 29 roads also report, but not all the same as those which report for March. These 29 roads had in the aggregate 16,061 miles of road and 3.7 per cent. more than last year. Their aggregate earnings were $22,028,342, which is 10⅛ per cent. more than for the corresponding quarter of last year. The earnings per mile increased from $1,275 to $1,372, or 7.6 per cent. Only seven of the 29 roads show a decrease in total earnings, and nine in earnings per mile of road. In ten cases the increase in earnings per mile is 20 per cent. or more, and there are some enormous increases, as 76.4 per cent. (Burlington, Cedar Rapids & Northern); 61.9 (Chicago, Milwaukee & St. Paul); 55.7 (Dakota Southern), and 37.3 (Toledo, Peoria & Warsaw). Probably in all these cases the increase is chiefly due to the heavier grain movement.

This report gives more material than usual for a judgment as to trunk line earnings. The Michigan Central reports an increase of 8.1 per cent., the Great Western of Canada one of 26.4; the Grand Trunk, one of 9 per cent. for the quarter; and a report for all the lines of the Baltimore & Ohio for the month of March shows an increase of 4.1 per cent.

Last year, when we had reports from 27 roads for the quarter, their earnings were 9 per cent. less than in 1876; and 27 roads which reported for 1876 had earned 11.5 per cent. more than in 1875. The fact that not all of the same roads are included in the reports for the different years prevents the making of an exact comparison; but the indications are that the earnings for the first quarter of this year have been similar to those of 1876, which were much the best since the panic. It is also true of this year as of that that the weather has been exceptionally favorably to low working expenses. The year 1876 was not a favorable one, but the first quarter of it was exceptionally so. After that the long continued and severe railroad war combined with other causes to reduce earnings, and in most cases overcame the favorable effect of the Centennial travel.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Greenville, Columbus & Birmingham.—The first track is laid from Greenville, Miss., east to Stoneville, 9½ miles. It is of 3 ft. gauge.

This makes a total of 267 miles of new railroad completed in the United States in 1878, against 269 miles reported for the corresponding period in 1877.

THE WINTER GRAIN MOVEMENT for the nineteen weeks from Dec. 1 to April 13 for five years shows the following results:

The receipts of the eight leading Northwestern markets have been:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
53,578,516	37,838,888	42,804,423	29,870,541	47,818,833

The receipts this year are thus 42 per cent. greater than last year and 12 per cent. greater than ever before.

The shipments of the same eight markets have been:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
37,849,045	20,349,369	24,222,173	15,648,307	22,928,000

The shipments this year are 86 per cent. greater than last year, and 56 per cent. greater than in any previous year.

For the same period the receipts at the seven Atlantic ports were:

1877-78.	1876-77.	1875-76.	1874-75.	1873-74.
66,768,962	35,723,363	33,620,688	19,955,014	36,281,492

The receipts of this year are thus 87 per cent. greater than last year and 84 per cent. greater than ever before.

The shipments from Northwestern markets are now chiefly by lake. But the receipts at Atlantic ports are still by rail. Probably about one more week can be given before the arrivals at New York from the Erie Canal are sufficient to indicate the full opening of navigation.

NEW PUBLICATIONS.

Remunerative Railways for New Countries, with some account of the First Railway in China: by Richard C. Rapier. E. & F. N. Spon, London and New York.

It is announced in the preface that this book "has arisen from the constant inquiries, received by the author, from persons anxious to make railways in new countries, or in new districts of old countries." It is printed on extra heavy paper, with gilt edges and showy binding, and altogether is a more luxurious volume than one would expect if the only profit to be derived from its publication would be that resulting from its sale.

The main principle set forth in the book is that in constructing a railroad it should be proportioned to the traffic to be carried; that for a light traffic a light road will suffice. With reference to the much disputed question of the gauge, the book is almost silent, excepting to say that "the gauge must be proportioned to the weights to be conveyed, and to the speed at which they are to be drawn," and a general recommendation *not* to adopt a gauge of less than 3 feet. The author is, however, silent about the advantages of narrow over the ordinary gauge for light roads, which is the main question in dispute.

Some elaborate estimates and tables are given, showing the cost of roads of various capacities, and the rate per mile to which the cost should be limited is estimated by the following rule:

"Let the probable value in pounds sterling of the traffic, per mile per week, during the first year or two of the working of the proposed railway, be carefully estimated. It is tolerably certain that at least half of the gross receipts will be absorbed in working expenses; so let the estimated gross receipts be divided by two, to give some idea of the net revenue per mile per week in pounds, and this may be taken as

a precise index of the number of thousands of pounds per mile to which the expenditure should be limited, in order to ensure 5 per cent. dividend."

That this is a very loose estimate will be apparent if we suppose two cases—in one district a road 20 miles long which will have a traffic of 60,000 tons of freight per year, for which the company will receive five cents per ton per mile or one dollar per ton over the whole line. If the expenses of operating the road are $30,000 there will be a balance of $30,000 profit. Suppose another line of equal length, built in a district in which there is competition for the traffic, and that the highest rate which can be charged is only two cents per ton per mile, or 40 cents over the whole line. With the same amount of traffic, other things being equal, the expenses would be the same, and therefore as the revenue would amount to only $24,000, there would be an annual loss of $6,000. The error in Mr. Rapier's method of calculation is that there is no necessary relation between the expenses and the receipts. The latter will depend upon the rates which can be charged, and the former very much upon the amount of traffic carried. In our first hypothetical case the expenses would be 50 per cent. of the receipts. If the rates charged were 4, 3, 2 or 1 cent per ton per mile, the expenses would then be 62½, 83⅓, 125 and 250 per cent. of the receipts.

A calculation of this kind, before it can be made trustworthy, must be based first upon the cost of carrying a given amount of traffic, and then upon the rates which will be received for carrying it.

Probably more railroads have become bankrupt by reason of calculations of expenses based upon a percentage of receipts than from any other kind of mistake in estimates. There is, as has been said, no necessary relation whatever between the receipts and expenses, and any calculations based upon such a relation will in all probability be misleading and entirely erroneous.

The book contains some quite elaborate estimates of cost of roads of different capacities. It is of course difficult to tell how trustworthy these are without a very careful estimate and comparison of prices. They will, however, doubtless be useful in the way of affording a guide for estimates to be made for different localities. The cost in different countries and for varying locations will differ so much that it is doubtful whether general estimates of this kind can or should be more than merely suggestive blanks to be filled up to suit the circumstances of each case.

Very excellent wood cuts are given in the book showing various styles of locomotives, full-sized engravings of Sandberg's rail sections, from 12 to 45 lbs. per yard, rail fastenings, turn-tables, track-scales, water-tanks, water-columns, signal-posts, telegraph instruments, portable crane, workshop engine and boiler, cars, shop machinery, etc. These are all of English design, and therefore whether adapted to this country or not they do not accord with our practice here.

While Mr. Rapier's book is a very suggestive one, yet it is at the same time very disappointing. All through, the reader is kept in a state of expectation that something very useful is about to be said, but somehow we read chapter after chapter, and what was hoped for is never found. There are some indications that the book was published as an advertisement. This suspicion is strengthened by the luxurious style in which it is published, and also by the frequent occurrence of the same name as that of the author as a member of a firm of manufacturers of the machinery illustrated. There is of course no objection to that or any other firm of manufacturers having their productions illustrated in the fullest way, but it is very desirable that they should do so: the objectionable feature consists in their doing this under the guise of a treatise on "Remunerative Railways."

By far the most interesting portion of Mr. Rapier's book is the appendix, which describes "The First Railway in China." A very full account is given of the construction and the subsequent taking up of this line. This latter was due apparently to the jealousy of the officials, and not to the prejudices of the people, of whom, the author says: "Nothing like hostility was ever manifested by the people; * * their behavior was uniformly good, every one regarding the railway in the most good-humored and good-natured way." The whole description is of the most interesting kind, and reads like a chapter of history of the middle ages or ancient times; and, as the author says, "this is probably the first railway which has been completed, worked at a profit for twelve months, and then bought and paid for in hard cash, for the express purpose of stopping it." The portion describing this diminutive Chinese railroad is illustrated by a number of photographs, one of them representing the transportation of the first locomotive, which is slung on two poles, and the latter carried on the shoulders of twelve stalwart Chinamen. Its weight was 2,464 lbs.

The Erie Plan of Reconstruction.

The purchase of the Erie Railway Wednesday is in pursuance of the London scheme of reconstruction, Messrs. Morgan, Welsh and Wells being a purchasing committee for the English reconstruction trustees. The amended scheme, as adopted by the trustees in 1876, includes the following provisions:

First consolidated mortgage and 6 per centum sterling bonds—No reduction in the rate of interest of the first consolidated bonds. The holders of the sterling 6 per centum loan bonds to be entitled to the same rights as if their bonds were (and for the purposes of this scheme they shall be deemed to have been) exchanged for first consolidated mortgage bonds, on 1st September, 1875; consequently their bonds will carry interest at the rate of 6 per centum up to and inclusive of that date, and thereafter at 7 per centum.

The coupons of the first consolidated mortgage bonds to be partly funded and partly paid in cash.

Coupon bonds (either those of the present company or of any new company formed for the working of the railway under foreclosure) to be issued in exchange for the funded coupons of the first consolidated mortgage bonds, the same to be payable in gold on 1st of September, 1920 (the due date of the first consolidated bonds) with interest thereon in the meantime at seven per centum per annum, and to be secured by a deposit of the funded coupons; these coupon bonds to bear interest on their entire amount from 1st September, 1877, that being about the mean date of the funded coupons.

Second consolidated mortgage and gold convertible bonds—The holders of the second consolidated and gold convertible bonds to fund their coupons as follows:

The second consolidated to fund 10 half-yearly coupons from June 1, 1875, to Dec. 1, 1879, both inclusive, and the gold convertible to fund 18⅔ quarterly coupons, viz.: from July 1, 1875, to Dec. 1, 1879, both inclusive.

These coupons to be funded at the present rate of interest on the bonds, viz.: 7 per centum, which will make a total of 35 per centum in the case of the second consolidated and 32⅔ per centum in the case of the gold convertible, for which amounts funded coupon bonds to be issued, bearing interest at the reduced rate of 5 per centum from 1st December, 1877, to 1st June, 1883, and thereafter 6 per centum.

The principle of the second consolidated and gold convertible bonds, to be represented by new second consolidated mortgage bonds, bearing interest at 6 per centum from 1st December, 1879, and maturing 1st December, 1869; the funded coupon bonds last mentioned to mature at the same date, and rank *pari passu* with them.

FORECLOSURE.

The property of the company to be foreclosed by or under the direction of the reconstruction trustees, who shall use such bonds and coupons as shall be deposited with them as they may deem advisable, for the purpose of buying in the railway after foreclosure. If the railway is bought in after such foreclosure a new company shall be formed to hold and work it.

SHARES.

One-half of the shares of the new company to be issued in the names of one or more sets of trustees, who shall hold the same for the purpose of exercising the voting power thereon until the dividend has been paid on the preference shares for three consecutive years; certificates being issued for the same, which shall entitle the holders to receive from the trustees all dividends declared in respect of the shares held in trust.

The shareholders of the present company to be readmitted to shares of equal amounts, preference for preference and ordinary for ordinary, but represented as to one-half by certificates under the last clause.

The costs of foreclosure and reconstruction and any other amounts necessary for the carrying of this scheme into effect to be paid out of the moneys to be raised under this scheme or otherwise, as the trustees may determine.

Transportation in Congress.

In the Senate, on the 22d:

Mr. Mitchell, of Oregon, Mr. Windom, of Minnesota, and Mr. Lamar, of Mississippi, all spoke in favor of the Senate bill for extending the time for the completion of the Northern Pacific Railroad.

In the Senate on the 23d:

The consideration of the bill to extend the time for the construction and completion of the Northern Pacific Railroad was resumed.

On motion of Mr. Edmunds the words "having due regard for the rights of said company" in the last section of the bill, which reserves the right to Congress to alter, amend, or repeal the act, etc., were stricken out.

Mr. Hereford, of West Virginia, moved to amend so as to provide that lands granted to the company, when the same shall have been earned by the company, shall be subject to taxation according to the laws of the state or territory within which the same may be situated.

After some discussion, Mr. Bayley, of Tennessee, submitted the following as a substitute for the amendment of Mr. Hereford:

"When said lands shall have been surveyed by the United States, and the company shall have become entitled to a patent for the same, they shall be subject to taxation according to the laws of the State or territory within which they may be situated."

Mr. Kernan, of New York, submitted an amendment so as to provide that bonds of the company to be issued to aid in the construction of the road, and to secure the same by mortgage, etc., shall not be issued unless on an affirmative vote or written consent of holders of not less than two-thirds of the entire preferred stock. Agreed to.

The amendment was accepted by Mr. Hereford in lieu of that submitted by him, and was agreed to by the Senate without a division.

Mr. Christiancy, of Michigan, moved an amendment so as to provide that the amount paid for transportation of mails over the road shall be the same as the compensation for like service in the States of Iowa, Kansas and Minnesota. Agreed to.

Mr. Eaton moved to amend so as to provide that the consent of the State of Oregon should first be obtained to construct the roads around the cascades of the Columbia River above mentioned. Agreed to.

Mr. Christiancy, of Michigan, moved to amend so as to provide that nothing in the act should be construed as recognizing the existence of the Portland, South Pass & Salt Lake Railroad Company, or any right of said company outside of the State of Oregon. Agreed to.

Mr. Christiancy, of Michigan, submitted an amendment continuing grants, rights, privileges, etc., to the company, "subject to any lawfully existing paramount right of any stockholder in, or the holder of any bond against," the said company, under its former organization, if such there be." Agreed to.

The bill was then read a third time and passed without a division.

In the Senate on the 25th:

The bills allowing the Southern Pacific to extend its road east through Arizona, and to aid in the construction of the Texas & Pacific, which were reported favorably by the Railroad Committee, were both laid over on objection to their present consideration made by Mr. Edmunds, of Vermont.

In the House on the 25th:

The Pacific Railroads sinking fund bill was put upon its passage as it came from the Senate, without amendment. Several points of order were raised and an effort made to have the bill referred to the Judiciary Committee, which failed. The bill was then briefly debated by Messrs. Butler, of Massachusetts, Cox, of New York, Hartridge, of Georgia, Dickey, of Ohio, and others, and finally passed by a vote of 243 to 2. The negative votes were cast by Messrs. Butler, of Massachusetts, and Lynde, of Wisconsin.

—Mr. Joseph Hildreth, at one time Superintendent of the Oregon & California road, died recently in the insane asylum at East Portland, Oregon. He occupied formerly a prominent position, but lost it and finally became insane from excessive drinking.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Chicago, Iowa & Nebraska, at the office in Clinton, Ia., May 14, at 10 a. m.

Chicago & Northwestern, at the office in Chicago, June 6, at 1 p. m. Transfer books will be closed from May 4 to June 10.

Dividends.

Dividends have been declared as follows:

Boston & Maine, 3 per cent., semi-annual, payable May 15. A year ago only 2 per cent. was paid, but the November dividend was 3 per cent.

Panama, 3 per cent., quarterly, payable May 1.

Boston & Albany, 4 per cent., semi-annual, payable May 15.

Boston & Providence, 3 per cent., semi-annual, payable May 15.

Seaboard & Roanoke, 3½ per cent., semi-annual, payable May 1.

Railroad Conventions.

The *Car Accountants' Association* will hold its third annual meeting at the Fifth Avenue Hotel, New York, beginning Friday, April 26. Members are notified that the meeting will be called to order at *ten o'clock, sharp.*

The eleventh annual convention of the *Master Mechanics' Association* will be held in Richmond, Va., beginning Tuesday, May 14.

The fifth annual meeting of the *Purchasing Agents' Association* will be held in New York, beginning Tuesday, May 21.

The twelfth annual meeting of the *Master Car-Builders' Association*, will be held at Niagara Falls, N. Y., beginning Wednesday, June 12.

Foreclosure Sales.

The sale of the *Erie Railway* under the decree of foreclosure of the second consolidated mortgage took place in New York, April 24. The sale included all the property of the company and was made under concurrent decrees of the New York Supreme Court and the New Jersey Court of Chancery. The property was bought for $6,000,000, for account of the security-holders joining in the plan of reconstruction, by the Purchasing Committee, Hon. Edwin D. Morgan, J. Lowber Welch and David A. Wells. At the time of the sale notice was read to bidders from the State of Pennsylvania, that the purchasers would be required to build a bridge over the Delaware at Matamoros. Notice was given also of a judgment held by the Chemung Railroad Company for $42,895, and an exception to the sale was taken and noted on the ground that sufficient time was not given to examine the inventory of the property.

The *Buffalo, Corry & Pittsburgh* road was sold April 19, under foreclosure of the first mortgage for $700,000. Bought for account of the bondholders by A. H. Barney, of New York, for $75,000. The road extends from Corry, Pa., to the Lake Shore at Brocton, N. Y., 43 miles. It was sold in bankruptcy in 1872, subject to the mortgage, and was bought by Wm. Phillips, then President of the Allegheny Valley Company. That company has since worked it, and has spent a good deal of money repairing it, though we believe that Mr. Phillips' heirs claimed the ownership. It has not been a profitable road, and did not always earn its working expenses. What disposition the purchasers will make of the road is not decided; probably the Allegheny Valley will continue to work it for the present.

The *Chicago & Southern* road was sold in Chicago, April 24, under a decree of foreclosure of a mortgage for $320,000, granted by the United States Circuit Court. Bought for $155,000, by parties reported to be acting in the interest of the Grand Trunk. The road is 20 miles long from Chicago to Dolton; it was built to give the Chicago, Danville & Vincennes an entrance into Chicago, and was used by that road for a time, but it has not been worked for some months.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—Mr. C. M. Wicker, late Assistant General Freight Agent, has been appointed Traffic Manager for all lines west of the Ohio River; his office is in Chicago. Mr. James Walsh, long the General Agent in Chicago, and previously in the service of the Grand Trunk, is appointed Assistant General Freight Agent.

Beaver Valley.—The officers of this new company are: President, Samuel Merrill; Vice-President, W. M. Jones; Secretary, C. J. Moore; Treasurer, Thomas Halton, Jr. Offices at Des Moines, Ia.

Chicago & South Atlantic.—The board has elected S. N. Yeoman, of Dayton, O., President. The election of directors was noted last week under the head of *Chicago & Atlantic*, the *South* being accidentally omitted.

Chicago, Milwaukee & St. Paul.—Mr. H. C. Atkins is appointed Superintendent of the Chicago Division, in place of R. Sage, Jr., resigned.

Cleveland, Columbus, Cincinnati & Indianapolis.—Master Mechanic L. S. Young will take charge of the Car Department also, in place of Wm. F. Smith, resigned.

Columbus & Toledo.—At the annual meeting in Columbus, O., April 10, the following directors were chosen: M. M. Greene, Wm. G. Deshler, D. S. Gray, Isaac Eberly, P. W. Huntington, E. L. Hinman, John Greenleaf, Columbus, O.; J. D. Van Deman, Delaware, O.; A. H. Kling, Marion, O.; M. M. Carey, Crawford, O.; S. M. Young, A. L. Backus, H. M. Walbridge, Toledo, O. The board reëlected M. M. Greene, President; James A. Wilcox, Secretary and Treasurer; T. J. Janney, Auditor.

Evansville, Washington, Brazil & Chicago.—The first board of directors is as follows: Peter Lemon, Evansville, Ind.; C. M. Thompson, Bowling Green, Ind.; D. D. Pratt, Indianapolis; O. H. Smith, F. A. Bowen, Henry Lester, Chicago; H. G. Brooks, Dunkirk, N. Y.

East Tennessee, Virginia & Georgia.—Mr. Charles H. Waring has been appointed Road Supervisor of the Western Division, with headquarters at Sweetwater, Tenn., to succeed W. H. Smith, resigned.

Gilbert Elevated.—Mr. Martin Van Brocklin has been appointed Superintendent of the road.

Green Bay & Minnesota.—In the list of directors given last week, the name of Hon. W. J. Abrams, of Green Bay, Wis., was accidentally omitted.

Indiana Southern.—The first board of directors is as follows: C. S. Andrews, J. G. Bryson, Wm. McDonald, J. W. Ormsby, T. Walker, W. H. Zimmerman, Brazil, Ind.; J. G. Niblack, Chicago; John Alexander, John S. Alexander, Philadelphia.

Joplin & Short Creek.—The first board of directors is as

follows: E. H. Brown, Matthew Clay, E. R. Moffett, Frank Playter, J. B. Sergeant. Office at Girard, Kansas.

Lake Huron & Southwestern.—The first board of directors of this new company is as follows: C. H. Prescott, T. M. Hubbell, C. D. Hale, John Sullivan, E. J. Pake, S. B. Laird, and W. C. Stevens. Office at Tawas City, Mich.

Michigan Central.—Mr. James R. Wood has been appointed Assistant General Passenger and Ticket Agent. Mr. Wood was formerly on the Burlington & Missouri River road, but has been with the Michigan Central some years as Assistant Superintendent of the Grand Rapids Division.

Monongahela Valley.—At a meeting held in Fairmont, W. Va., April 18, this company was organized with the following officers: President, C. M. Davison; Secretary, E. W. S. Moore; Treasurer, Joseph E. Sands.

Pine Hill Coal Co.—At a meeting held in Mt. Vernon, Rockcastle County, Ky., recently, J. R. Crooke, C. Crooke and W. P. Crooke were chosen directors; C. Crooke, President; J. D. Proctor, Secretary.

Spencer Branch.—A preliminary organization has been completed by the election of the following directors: John L. Bush, James Capen, Erastus Jones, Charles N. Prouty, David Prouty, Isaac L. Prouty, Richard Sugden, J. W. Temple, Wm. Upham; Clerk, J. W. Temple; Treasurer, Charles N. Prouty. Office at Spencer, Mass.

Terre Haute & Worthington.—At the annual meeting in Worthington, Ind., recently, the following directors were chosen: S. H. Carnahan, S. B. Harrah, P. McKissick, J. E. Miller, L. P. Mullinix, C. N. Shaw, G. Shryer, W. Watson, Worthington, Ind.; R. G. Hervey, Terre Haute, Ind. The board elected R. G. Hervey President; P. McKissick, Vice-President; S. H. Carnahan, Secretary; H. D. Scott (of Terre Haute), Treasurer.

Valley, of Ohio.—At the annual meeting in Cleveland, O. April 15, the following directors were chosen: L. M. Coe, H. M. Flagler, Cleveland; D. L. King, Akron, O. The board elected D. L. King President; James Farmer, Vice-President; Wm. B. Porter, Secretary. Mr. Porter succeeds L. B. Clark; the others are reëlected.

Wilmington, Columbus & Augusta.—Mr. D. L. Russell has been appointed Auditor.

PERSONAL.

—Mr. Wm. Orton, President of the Western Union Telegraph Company, died suddenly of paralysis at his residence in New York, April 22. Mr. Orton was born in Cuba, N. Y., July 14, 1826; when a boy he learned the printer's trade, and subsequently went into business as a bookseller and publisher, in Geneva, N. Y., removing afterward to Buffalo, and finally, in 1858, to New York. In 1862, he was made Collector of Internal Revenue for the Sixth District of New York, where he showed much ability in organizing the service, then entirely new. In May, 1865, he was appointed Commissioner of Internal Revenue, but held that office only four months, resigning to become President of the United States Telegraph Company. On the consolidation of that company with the Western Union in 1866, Mr. Orton became Vice-President, and in 1867, was chosen President, and held that office 11 years, until his death. He was a very hard worker, giving close personal attention to the company's business, and also taking much interest in politics, though he never held any elective office.

—Hon. John Young, an old and prominent citizen and merchant of Montreal, died in that city last week, after a long but not severe illness. He was prominent in all matters relating to the commerce of the city, served for many years on the Harbor Commission, was an earnest advocate of the improvement of the St. Lawrence, the Caughnawaga Canal and other measures, and was one of the first projectors of the Grand Trunk Railway and the Victoria Bridge. He served several years in the Canadian Parliament and was for a time Commissioner of Public Works.

—Mr. John T. Boisfeuillet, for a long time Secretary and Treasurer of the Southwestern Railroad Company of Georgia, died at his residence in Macon, Ga., April 18.

—Mr. Wm. F. Smith has resigned his position as Master Car-Builder of the Cleveland, Columbus, Cincinnati & Indianapolis road, on account of continued ill health.

—Mr. Anselm D. Robinson, President of the Robinson Iron Company of Plymouth, who has just died in this city, was one of the prominent iron manufacturers in the state. After laboring for the Squawbetty Works in Taunton, for Lazell, Perkins & Co. in Bridgewater, and the Agawam Works in Wareham, he accepted the superintendency of the Tremont Iron Works of Wareham, and under his supervision the first iron rail was rolled in this country. Leaving Wareham he accepted the position of Superintendent of an iron works in Pennsylvania, and remained there some time. He then went into the Bridgewater Iron Works as part owner and Superintendent, where he remained until 1865, when he went to Plymouth and purchased the iron works of N. Russell & Co., and formed a company under the name of the Robinson Iron Company.—*Boston Advertiser.*

—Mr. Fred de Funiak, Chief Engineer and Superintendent of Machinery of the Louisville & Nashville road, will visit the Paris Exposition as Commissioner from the State of Kentucky, and also as Special Commissioner for the American Society of Civil Engineers. The board of directors has granted him two months' leave of absence.

—Hon. Thomas Allen, President of the St. Louis, Iron Mountain & Southern Company, is said to be a candidate for United States Senator from Missouri.

—Mr. Russell Sage, Jr., has resigned his position as Superintendent of the Chicago Division of the Chicago, Milwaukee & St. Paul, and will engage in other business.

TRAFFIC AND EARNINGS.

Water Rates.

Lake rates are higher and canal rates lower. For most of the week ending with Wednesday the quotations were 3 to 3¼ cents for corn, and 3¼ to 3½ for wheat per bushel from Chicago to Buffalo. As is not unusual, the rate from Milwaukee has generally been higher than that from Chicago, though the distance is 85 miles less. It varied last week from 3⅛ to 4 cents for wheat.

Canal rates stood pretty firmly at the opening rates of 6 cents for wheat, 5½ for corn and 3¾ for oats from Buffalo to New York, until Tuesday, when the figures quoted were 5½, 4¾ and 3¼.

Ocean rates, which for some weeks past have been comparatively high, reaching at times 9¼d. per bushel for grain, by steam, from New York to Liverpool, fell at the beginning of this week, and the quotations Tuesday were 6¾d. for grain, both by sail and by steam, from New York to Liverpool, and by steam 25s. to 30s. per ton for provisions, and 35s. for cheese, and ¼d. per pound for cotton. To Cork for orders, cargoes were taken from New York at 5s. 9d. to 6s. per quarter of 480 lbs.; from Philadelphia, at 5s. 6d. to 5s. 9d.; and from Baltimore, at 6s. 3d.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending Dec. 31:

	1877.	1876.	Inc. or Dec.	P.c.
Kansas City, St. Joe. & Council Bluffs	$1,423,797	$1,241,329	I. $182,468	14.7
Expenses	979,190	908,118	I. 71,072	7.8
Net earnings	$444,607	$333,211	I. $111,396	33.4
Earnings per mile	5,707	4,975	I. 732	14.7
P. c. of expenses	68.77	73.15	D. 4.38	6.0
Missouri River, Fort Scott & Gulf	865,734	902,094	D. 36,360	4.0
Expen's and tax's.	496,498	529,980	D. 33,482	6.3
Net earnings	$369,236	$372,114	D. $2,878	0.8
Earnings per mile	5,377	5,603	D. 226	4.0
P. c. of expenses	57.35	58.76	D. 1.41	2.4

Seven Months ending Dec. 31:

Michigan Central	$3,903,513	$3,822,197	I. $81,316	2.1
Expenses	2,591,015	2,788,975	D. 197,960	7.1
Net earnings	$1,312,498	$1,033,222	I. $279,276	27.0
Earnings per mile	4,855	4,754	I. 101	2.1
P. c. of expenses	66.37	72.96	D. 6.59	9.0

Three Months ending March 31:

	1878.	1877.		
Bur., Cedar Rapids & Northern	$459,804	$215,252	I. $244,552	113.6
Net earnings	171,761	45,637	I. 126,124	276.6
P. c. of expenses	60.44	78.80	D. 18.45	23.4
Denver & R. Grande	179,492	131,259	I. 48,233	36.7
Net earnings	57,103	55,800	I. 1,294	2.3
P. c. of expenses	68.00	57.60	I. 10.40	18.1
Wabash	1,049,310	959,046	I. 90,264	9.4
Net earnings	264,294	136,781	I. 127,513	93.2
P. c. of expenses	74.83	85.74	D. 10.91	12.7

Two months ending Feb. 28:

Grand Rapids & Ind.	$155,547	$146,612	I. $8,935	6.1

Month of February:

Grand Rapids & Ind.	$82,485	$81,644	I. 841	1.0

Month of March:

Houston & Tex. Cen.	$174,528	$166,111	I. 8,417	5.1
Net earnings	16,286	*59,177	.....	.....
P. c. of expenses	90.42	135.73	D. 45.31	33.4

Second week in April:

Denver & Rio Gr.	$16,635	$12,113	I. $4,522	37.4
St. L., I. Mt. & Sou'n.	80,700	79,411	I. 1,289	1.6

Week ending April 12:

Great Western	$80,620	$89,013	D. $8,393	9.4

Week ending April 13:

Grand Trunk	$169,261	$185,622	D. $16,361	8.8

*. Deficit.

Grain Movement.

Receipts and shipments for the week ending April 13 were, in bushels:

	1878.	1877.	Increase.	P. c.
Northwestern receipts	3,997,045	1,958,962	2,038,083	103.9
" shipments	3,174,725	1,778,463	1,396,262	78.4
Atlantic receipts	3,937,425	2,440,109	1,497,316	61.4

Of the Northwestern shipments, 29 per cent. (926,520 bushels) were by rail this year, against 100 per cent. in 1877 and 1876, 97¾ per cent. in 1875, and 35¾ in 1874.

Of the Atlantic receipts, 44.9 per cent. arrived at New York, 23.4 at Philadelphia, 19.4 at Baltimore, 7.8 at Boston, 4.3 at New Orleans, and 0.1 per cent. each at Boston and Montreal.

The shipments from Northwestern markets were much less than the previous week, but much larger than any shipments before navigation opened. The receipts at these markets were less than for two weeks before; the receipts of Atlantic ports the smallest for four weeks. It was not yet time for the latter to be affected by the opening of navigation. The lake shipments for the first two weeks since that event have been quite moderate, compared with shipments other years when there was much grain to forward.

Coal Movement.

Coal tonnages for the week ending April 13 are reported as follows:

	1878.	1877.	Inc. or Dec.	P. c.
Anthracite	368,346	434,335	D. 65,989	15.2
Semi-bituminous	62,195	79,221	D. 17,026	21.5
Bituminous, Pennsylv'a.	37,731	29,188	I. 8,543	29.3

The actual tonnage passing over the Pennsylvania & New York road for the four months of its fiscal year, from Dec. 1 to March 30, was:

	1878.	1877.	Decrease.	P. c.
Anthracite	168,654	233,345	64,691	27.7
Bituminous	109,844	128,717	18,873	14.7
Total	278,498	362,062	83,564	23.1

Shipments of coal from Seattle, Wash. Ter., for March were 8,925 tons; three months ending with March, 18,808 tons. All of this went to San Francisco, except 1,500 tons for steamship use.

The rate for tolls on the Chesapeake & Ohio Canal from Cumberland to Georgetown has been fixed at 40 cents per ton, including wharfage. The rate at the opening of navigation last year was 48 cents, including wharfage, but at the close of the season it was 25 cents, without wharfage.

THE SCRAP HEAP.

Railroad Manufactures.

The New York *Iron Age* reports the condition of the blast furnaces of the United States on April 1 as follows:

	In blast.	Out of blast.	Total.
Charcoal	60	207	270
Anthracite	97	129	226
Bituminous or coke	95	122	217
Total	252	458	713

From three charcoal furnaces there are no reports. The aggregate weekly capacity of the 252 furnaces in blast is 48,055 tons of pig iron; of the 458 idle furnaces, 67,309 tons. At the same date last year 238 furnaces were in blast and 488 out of blast.

The Putnam Machine Co., of Fitchburg, Mass., recently put up a lathe weighing 20 tons in the Boston, Clinton, Fitchburg & New Bedford repair shops at Taunton.

The Carthage (N. Y.) Furnace will go into blast shortly. The company has a year's supply of charcoal on hand.

The Gibbs & Sterrett Manufacturing Co., at Titusville, Pa., is filling an order for gauge-cocks from a firm in Haarlaem, Holland.

Wilson, Walker & Co., of Pittsburgh, have contracted with the Keystone Bridge Co. for a mill building 72 by 250 ft., to be entirely of iron. It will replace one burned down a short time since.

Park Brothers & Co. are adding to their Black Diamond Steel Works at Pittsburgh eight new gas producers, and three new 42-pot Siemens regenerating steel-melting furnaces. When these are completed the melting capacity of the works will be 60 tons of steel per day.

Fox River Furnace, at Depere, Wis., is running one stack and making 20 tons of iron per day.

Tiffany refrigerator cars are now being built in England and on the continent of Europe by shippers of perishable goods. New cars of this pattern recently made in St. Louis weight 22,200 lbs. A fruit and vegetable express running on the Atlantic Coast Line has been using these cars with success for shipping strawberries from Charleston to New York. The quantity of ice used is about 1,000 lbs., and the temperature maintained 38 to 40 degrees.

The Louisville Bridge Co. has a contract for three spans, 145 feet each, of iron truss bridge, to replace three wooden spans of the Nashville, Chattanooga & St. Louis bridge over the Tennessee at Bridgeport, Ala.

Among other contracts the Keystone Bridge Co., of Pittsburgh has one for four iron bridges, 850 feet in all, for the New Haven & Northampton road.

The Billmeyer & Small Co., at York, Pa., has closed a contract for 250 freight, three passenger and three parlor cars for the Denver & Rio Grande road. Orders are also on hand for cars from four narrow-gauge roads in Pennsylvania, Georgia, New York and Nevada.

The Kimball Manufacturing Co., of San Francisco, has just finished a number of street cars for a road in Oakland, Cal.

The Leighton Bridge & Iron Works, at Rochester, N. Y., have contracts for four spans of iron bridging on the New York Central and five on the Erie.

The Furst & Bradley Manufacturing Co., of Chicago, recently shipped 50 scrapers to Carlisle, Orman & Crook at Pueblo, Col.; 50 scrapers to George Tritch at Denver, Col., and a lot to Cornell & Co., at Glasgow, Mo.

The Irondale Furnace, in Preston County, W. Va., has gone into blast.

The reported sale of the La Grange iron estate in Tennessee to Justice & Co., of London, is contradicted. The property was not sold to that firm, but placed in their hands to be sold.

Lancaster Furnace, near Grafton, W. Va., is preparing to go into blast.

The Jackson & Sharp Co., of Wilmington, Del., has a large order for passenger and baggage cars for the St. Paul & Pacific. A passenger car was lately completed for the Dakota Southern, and four Woodruff parlor cars to run on the Camden & Atlantic.

Thomas Meikle & Co., of Louisville, lately sold an Otis steam shovel to the Mobile & Ohio.

Nickel & Strassberger, of Chicago, lately sold five levels and two transits to the Chicago & Alton, for use on the Kansas City extension.

H. B. Cobb & Co, of Wilmington, Del., have been busy on orders for car springs for the Pennsylvania, the Michigan Central and the Gilbert Elevated roads.

The Middleton Car Works, at Middleton, Pa., will be sold at public sale May 2. The shops adjoin the Pennsylvania track and are well supplied with the necessary tools and machinery.

The Pittsburgh, Cincinnati & St. Louis shops at Steubenville, O., are building six first-class passenger cars.

The Pacific Rolling Mills, of San Francisco, are making 30 lbs. rails for the Olympia Railroad.

The machinery and stock of the American Emery Wheel Co., at Ballston Spa, N. Y., were sold at receiver's sale April 20, in the suit of Allen against Heaton. They were bought for $1,780 by Charles H. Gould, who will continue the manufacture of Heaton emery wheels, with Mr. Heaton in charge of the works.

The Tredegar Iron Works, at Richmond, Va., have just completed a train of 15 cars for O'Brien's circus.

The Columbia Car Spring Co., of New York, has just completed extensive alterations and improvements in its machinery and heating furnaces, and has its books full of orders to be filled.

Mining Engineers Invited to Germany.

The Prussian Minister of Commerce, Industry and Public Works, Dr. Achenbach, has addressed the following official communication to Professor Egleston, of the School of Mines, Columbia College:

"In the expectation that American mining engineers attending the Paris Exposition this year will extend their tour of observation to Germany, for the purpose of inspecting its industrial establishments, and being desirous to reciprocate the friendly reception accorded to German artisans, and especially to the commissioners sent by me, on the occasion of the Centennial Exposition at Philadelphia, I have directed that technical works and geographical, topographical and other maps be open for inspection to our American visitors in the library of the Royal Mining Academy, Lustgarten No. 6, and that information can be obtained there regarding the most desirable routes to take, and the location and importance of the industrial establishments which the visiting engineers may desire to inspect. Please have the kindness to inform accordingly the President of the Association of Mining Engineers."

Railroad Equipment and Bridges for South America.

The Philadelphia *Times* of April 18 says: "Messrs. Fralick, Murphy & Co., mercantile and export agents, yesterday received orders through Mr. Fralick, who is now in South America as United States Postal Commissioner, embracing, among various things, the entire equipment of a narrow-gauge railroad from Truxillo to Salaverry, Peru, including two passenger and two freight locomotives, six passenger and three baggage cars, 400 tons of rails and a large amount of machinery to equip railroad shops, foundry, etc. The total order amounts to about $200,000. The terms of payment are one-fifth cash and the balance in four equal payments at the end of three, six, nine and twelve months respectively. The long time for some of the payments is in accordance with the custom established in the country by English merchants. This order is looked upon as the beginning of an extensive trade between this country and the South American states, particularly with regard to machinery and manufactured iron. The same mail brought a letter from a prominent merchant of Lima, stating that the Peruvian government proposed building a large number of suspension bridges in the mountain regions, where the mail routes are interrupted by streams, inclosing tracings of the proposed bridges and asking estimates. The writer also stated that a project was on foot to convey water by means of iron pipes from the mountains, a distance of some sixty miles, to the city of Iquique, which is now supplied with condensed sea water, and asked for estimates."

Notes.

One of the pleasant experiences of travel on a suburban road is to wait at a bridge while an old sloop with two men on board slowly works its way through the open draw. And when the sloop gets stuck and keeps the train waiting half an hour it is delightful to watch the calm indifference with which the captain smokes his pipe and lazily watches the impatient passengers who crowd out on the platforms, and the apparent pleasure he takes in their profane remarks.

A. B. Hull, the Freight Superintendent of the Danbury & Norwalk Railroad, has introduced a novel feature in monumental literature. On the monument in his lot in the Danbury cemetery he has had a *fac simile* of his signature inscribed. It is the first instance of the kind, but it will soon become popular. The work has been neatly done by Henry

E. Comes.—*Danbury News.* None genuine without the signature, we suppose.

An exchange says that the Chief Engineer of the Chicago & Northwestern, to test the smoothness of the track, placed a glass of water on the seat of a Pullman palace car, the other day, and carried it right through from Chicago to Omaha, without losing a drop. Thinking specific gravity might have something to do with it, next trip he tried a glass of whisky, and when he examined the glass at the first station out he found it as dry as the desert of Sahara at high noon.

The Canton (Ill.) *Advertiser* gives currency to the statement that at a railroad station in Fulton County is posted the following notice to agents: "You will not deliver freight until all charges are paid, to any man, male or female, company, corporation or other consignee. A. T. Hall, Treasurer."

Long Run to a Cord of Wood.

The locomotive Santa Fe on the Atlantic, Gulf & West India Transit Company's road, we are informed, on one day in March made the run from Fernandina, Fla., to Cedar Keys, 155 miles, with the mail train of three cars, using only three-quarters of a cord of wood, or at the rate of 206⅔ miles to the cord. The schedule time of the train is 9¼ hours and the usual consumption of wood by other engines is 2¼ cords for the run. The engine is of the ordinary eight-wheel pattern, with 14 by 22 in. cylinders and four 5 ft. drivers. It was built by the Rogers Locomotive Works at Paterson, and was lately rebuilt at the same works and sold to the company on whose road it now runs.

Train Accident Report—Correction.

In our train accident report for April a rear collision was reported on the night of the first on the Lake Shore & Michigan Southern, near Linndale, O. We are informed that no such accident occurred on the Lake Shore road. Linndale is on the Cleveland, Columbus, Cincinnati & Indianapolis.

Relics of the Ashtabula Disaster.

The Ashtabula correspondent of the Cleveland *Herald* says: "The sale of the relics of the great railroad disaster began this morning (April 16) at 10 o'clock. There was not much excitement, but no difficulty was experienced in selling the articles for their intrinsic value, which is small. The relics were displayed on a table for the examination of bidders, and the most valuable ones were sold separately, while those of little worth were placed together. The articles were, as may be imagined, various, consisting of jewelry, charred books, china, pieces of cloth, photographs, letters, keys, etc. Nearly all showed marks of the terrible conflagration that raged on that fatal night. While the auctioneer was disposing of a burned watch a young lady present, Miss Stockwell, suddenly leaned forward on the table and anxiously reaching with her hands for the time piece burst into tears, exclaiming that it was her father's, A. H. Stockwell, formerly a hotel landlord here. He was on the train, and nothing which belonged to him could be found by diligent searchers until his daughter discovered this article which by some oversight she had overlooked heretofore when examining the things in the Coroner's possession. The remains of Mr. Stockwell were never identified. The following shows the prices obtained for some of the articles, the bidders being mostly inhabitants of Ashtabula and vicinity. A gold pen, partly burned, together with one of Conductor B. Henn's checks, 40 cents; oroide watch, 20 cents; bunch of keys, 15 cents; locket, 5 cents; lot of trinkets, 10 cents; metal car trimmings, melted, 21 cents. The sale was closed at noon, but was resumed early in the afternoon.

"There was a larger crowd present in the afternoon than in the morning, and more interest was manifested. The articles of most value were sold this morning. A watch, which was good for nothing except as a memento, was sold at 38 cents. Several broken necklaces were sold at 3 and 5 cents each. One linen handkerchief with a monogram on one corner brought 17 cents.

"When the small articles were disposed of Acting Coroner E. W. Richards adjourned the auction to Haskell's Block, where the larger things were kept, such as overcoats, dresses, etc. The first article sold was an ulster, which was a very good one, not having been injured in any way; it was sold for five dollars. The rest of the things were damaged more or less and did not bring much money. One heavy coat, damaged, was sold for $1.05. Three other coats brought $1.30, which was all they were worth. Mrs. J. B. Hopkins, of Painesville, found a stocking which she said belonged to her brother, Mr. John Potter, of Boston. Mr. Potter was on the wrecked train, and nothing was ever found that belonged to him until now. A large number of articles that had no intrinsic value were sold for 5, 10 and 15 cents, but E. W. Richards says that the things of most value were sold at a very low price, so that the amount of money realized from the sale, $42.03, will not reach the sum of the inventory. There was $30 paid for advertising in the town papers."

Compressed Air as a Motor for Street Cars.

The Second Avenue Railroad Company in New York, has been for some time experimenting with a car driven by compressed air, the machinery being the invention of Messrs. Hardy and James, two Scotch engineers. The results are said to have been so encouraging that the company is about to have several more cars built on the same plan. The machinery is said to be very simple, to occupy but little room, and to cause none of the heat and smell which is objected to when a steam engine is used. It also weighs much less than a steam engine and boiler of the same power.

RAILROAD LAW.

Road-Crossing Accidents—Negligence.

In the case of Rathgeb against the Pennsylvania Company, lessee of the Pittsburgh, Fort Wayne & Chicago Railway, on appeal from the District Court, the Ohio Supreme Court lately held:

1. Ordinary prudence requires that a person in the full enjoyment of the faculties of hearing and seeing, before attempting to pass over a known railroad crossing, should use them for the purpose of discovering and avoiding danger from an approaching train, and the omission to do so, without a reasonable excuse therefor, is negligence, and will defeat an action by such person for an injury to which such negligence contributed.

2. In an action for damages for alleged negligence, the question of negligence on the part of the defendant, or of contributory negligence on the part of the plaintiff, is generally a mixed question of law and fact, to be decided by the jury, under proper instructions from the court.

3. But if all the material facts, touching the alleged negligence, be undisputed, or be found by the jury, and admit of no rational inference but that of negligence, in such case the question of negligence becomes a matter of law merely, and the court should so charge the jury.

4. The Court in charging the jury observed: "I will not say to you that the plaintiff should have looked east along the track. I will only say that he was obliged to use his sense of sight in a reasonable manner; and it is for you to say whether he ought to have looked to the east along the track or not before he attempted to cross." If it appears that by looking he could have seen and avoided the danger, it was his duty to look; and in such case the Court should have charged as a matter of law that it was his duty to look.

Damages for Running Trains on a Public Street.

In Louisville, Ky., Feb. 2, the Court of Common Pleas made a decision in the first of a number of suits brought against the Louisville Bridge Company and the companies whose trains use its track. The suits were brought by property owners on Fourteenth street, Louisville, through which the bridge track runs, to recover damages for annoyance, danger and trouble caused to them by the running of locomotives through the street. In the first case, which is regarded as a test case, the defendants pleaded the authority given them to use the street by the City Council. The Court charged the jury as follows:

"Although the General Council of the City of Louisville had the power to authorize Fourteenth street to be appropriated for such public uses, the promotion of commerce and business, as the general good of the city might require, it could not, under the law, authorize such appropriation of Fourteenth street by railroad tracks for steam railroads or steam railroad cars as would materially hinder its ordinary reasonable use by persons living thereon as a passway for foot-passengers, horses and the vehicles in ordinary and general use."

The jury gave a verdict of $1,000 damages for the plaintiff. The case will probably be carried up to the Court of Appeals.

OLD AND NEW ROADS.

Alabama & Chattanooga.—Under the management of General Superintendent Charles P. Ball the condition of this road has been so improved that it is now possible to run passenger trains over it at a fair rate of speed, which was not the case some time ago. During the past three months 75,000 new ties have been laid down and a large amount of bridge-work done. Lately a special train was run through from Chattanooga to Meridian at the rate of 25 miles an hour, doing about one-third of the distance at the rate of 30 miles an hour.

John Swann, purchaser of the road, gives notice that proposals will be received at the office in Chattanooga, Tenn., until May 10, for the grading and masonry necessary to complete six sections at unfinished parts of the road between Birmingham and Tuscaloosa, Ala. Profiles and specifications can be seen at the office in Chattanooga.

Atlanta & Charlotte Air Line.—The Mason trestle on this road has been filled in, and a change made in the road by which Kiler trestle, which was 108 feet high, is avoided and abandoned. Three other trestles, at Bridges Creek and the Seneca and French Broad rivers are now being filled in.

Beaver Valley.—This company has been organized to build a railroad from Des Moines, Ia., west by north through Polk, Dallas and Guthrie counties to a point not yet decided on.

Burlington & Southwestern.—This company is reported to be considering the question of building a branch from Donnellson, Ia., south by east to Keokuk. The distance is about 20 miles, and for nearly all the distance there is a road-bed graded several years ago.

Canada Southern.—The Detroit *Post and Tribune* of April 20 says: "As is well known, the Canada Southern and the Lake Shore & Michigan Southern have for some time past been pooling the earnings of their respective roads. Consequently anything which will reduce expenses without inconveniencing passenger travel is desirable. Heretofore each road has had six trains daily between this city and Toledo, running side by side within the same fences. By a new arrangement, which goes into effect May 12, the Lake Shore & Michigan Southern will draw off all its passenger trains on this division except the one which leaves here at 6:40 p. m., and the one which leaves Toledo at 8:25 a. m. The Canada Southern will run three passenger trains each way daily, using the Lake Shore track between Toledo and Monroe. Freight trains will continue to run over its own line. This new move will not only prove economical, doing away with considerable unnecessary expense, but will also afford just as good facilities to passengers as heretofore. Inasmuch as the Canada Southern trains run in connection with through trains, they are a necessity and could not be abandoned, while the taking off of four trains on the Lake Shore will not discommode the traveling public. A decided increase in the pooled earnings will be the result. It is quite probable that the Canada Southern will put on an extra train between this city and Grosse Isle."

Chicago, Milwaukee & St. Paul.—The right of way has been arranged for along the whole line of the extension westward of the Iowa & Dakota Division. Contracts for grading have been let, and it is promised that cars will run to Emmetsburg, 25 miles west of the present terminus at Algona, Ia., by July, and to Sheldon, 90 miles, before winter.

Cincinnati Southern.—The statement of the lessee for the quarter ending March 31, is as follows:

Passengers	$30,026.90
Freight	51,425.52
Express mail, etc	3,933.77
Total ($540 per mile)	$85,386.19
Expenses (46.30 per cent.)	39,545.07
Net earnings ($290 per mile)	$45,841.12
Less interest on lessee's capital	$6,535.73
" 10 per cent. of balance, as per contract	3,930.54
	$10,466.27
Balance due trustees	$35,374.85

The earnings were reduced by the continued heavy rains making the country roads impassible and preventing shipments of produce.

Cleveland, Canton, Coshocton & Straitsville.—This company, formerly the Massillon & Coshocton, has recently had a careful survey made of its projected line through the Sugar Creek Valley in Tuscarawas County, O. The survey has shown the existence not only of several valuable seams of coal, and also of an extensive deposit of black band iron ore.

Connecticut Western.—The board of directors has appointed a committee to confer with the sufferers from the Tariffville disaster. Without admitting the company's liability, the board proposes to do what is possible in settlement, though they say that the company cannot afford to pay out much money. It is thought that no compromise can be arranged in a number of the cases—the sufferers preferring to see what they can get from the courts.

Danbury & Norwalk.—The new agreement between this company and the Housatonic is not for a lease of the road, but for a division of business and the maintenance of local rates, to be jointly agreed upon, to all points reached by both roads. It is also said that all freight coming over the Housatonic to points west of Norwalk will be sent over the Danbury & Norwalk, instead of going by way of Bridgeport, and that the Housatonic branch to Danbury will hereafter be worked by the Danbury & Norwalk. This agreement will settle a long-standing dispute between the two companies.

Denver & Rio Grande.—This company recently sent out a force for the purpose of taking possession of the line through the Raton Pass for the extension of the road southward into New Mexico. It was found, however, that the Atchison, Topeka & Santa Fe was beforehand, that company having not only located its line through the pass, but put a large force at work on the grading. The party was too strong to be dislodged by force, and the Atchison, Topeka & Santa Fe Company also at once made application for a preliminary injunction to prohibit the other party from interfering with its line. The injunction was granted and the question of continuing it was to be argued this week. The Raton Pass is said to be the only practicable route for a railroad southward into New Mexico from El Moro.

The report of Mr. R. F. Weitbrec, Treasurer, gives the following figures for March and the three months ending March 31:

	March.	Three months.
Freight	$44,072.61	$127,214.54
Passengers, mail and express	19,763.33	51,510.97
Miscellaneous	464.85	765.85
Total	$64,300.79	$179,491.36
Expenses	43,904.90	122,388.11
Net earnings	$20,395.89	$57,103.25
Gross earnings per mile	211.52	590.43
Net " "	67.09	187.84
Per cent. of expenses	68.28	68.00

Earnings from Government business in March were $3,720.84. Compared with 1877, March shows an increase of 30.6 per cent. in gross, and a decrease of 14.2 per cent. in net earnings; the three months an increase of 36.7 per cent. in gross, and of 2.3 per cent. in net earnings.

Erie.—The returns made by the company to the Secretary of Internal Affairs of Pennsylvania not being in the form required by law, the Secretary has notified the company that an amended return must be filed, or he will proceed to enforce the penalties provided by law. These are a fine of $5,000 and an injunction preventing the company from doing business in the State.

James McHenry's petition to be allowed to intervene as party defendant in the foreclosure suits against the Erie Railway Company was, on April 18, decided adversely by the New York Supreme Court. In his opinion, Judge Lawrence says that Mr. McHenry has not established to his satisfaction that he has the first lien which he claims either upon the Western Extension certificates or upon the stock of the Cleveland, Columbus, Cincinnati & Indianapolis Railway Company owned by the company and now in possession of the Receiver. The allegations of the petition in relation to the alleged liens, Judge Lawrence says, are most fully met by the answering affidavits, and Mr. McHenry's allegation that he is a creditor of the Erie Railway Company, is not only flatly denied, but it is averred that he is actually indebted to the company in about $2,000,000. Taking the most favorable view of the case for the petitioner he can only claim to be a creditor at large, and as such he has no *status* in a court of equity. Besides, if he has the first or specific lien which he claims, as he is not a party to the foreclosure suit, no right which he may possess can be effected by the judgment in that action. Mr. McHenry, too, having with others a suit pending in which the validity of all the proceedings in the foreclosure suit is questioned, he will have ample opportunity to establish in that suit the invalidity of the decree of foreclosure.

The suit of J. C. Bancroft Davis, Trustee, to foreclose the first consolidated mortgage, which was at first concurrent with that to foreclose the second consolidated mortgage (under which the decree of foreclosure has been granted), has been discontinued, and the Court last week ordered a reference to ascertain what compensation should be paid the trustee and his counsel.

In the suit of Bischoffsheim & Goldschmidt against the Receiver, to recover commissions on the negotiation of the exchange of certain bonds, the Court held that plaintiff was not required to join the company and the trustee in the suit, especially as the services, for which commissions are claimed, were performed after the Receiver's appointment.

Argument was heard, April 22, on a suit begun by John F. Brown and F. W. Isaacson, who claim to be holders of preferred stock, and ask to have the foreclosure sale further adjourned. The petitioners charge mismanagement by the Receiver, and claim that their interest in the property would be injured or destroyed by the sale. On the other side it is charged that they have no real interest, and are only acting for James McHenry; that they have allowed the foreclosure suit to go on without interfering, and now seek to come in at the last minute merely to secure a postponement of the sale. Argument in this case was continued on April 23, but not finished, and resumed on the morning of April 24. The court declined to postpone the sale further, and it took place, as noted elsewhere.

Gulf, Colorado & Santa Fe.—The President of this company reports that in his recent trip along the proposed line to Belton he secured the following subscriptions: Bell County, $300,000; Milan, $200,000; Burleson, $200,000; Washington, $150,000, and Austin, $150,000, making $1,000,000 in all. In each case the subscriptions are payable as soon as the track is laid to the borders of the county subscribing.

Greenville, Columbus & Birmingham.—Track is reported laid on this narrow-gauge road from Greenville, Miss., on the Mississippi River, east to Stoneville on Deer Creek, 9½ miles, and a train is running regularly over the road.

Houston & Texas Central.—This company's statement for the eleven months of its fiscal year ending March 31 is as follows:

	1877-78.	1876-77.	Inc. or Dec.	P. c.
Earnings	$2,524,940.31	$2,783,567.04	D. $258,626.73	9.3
Expenses	1,570,857.20	1,862,786.52	D. 291,929.32	15.7
Net earnings	$954,083.11	$920,780.52	I. $33,302.59	3.6
Gross earnings per mile	4,999.88	5,512.01	D. 512.13	9.2
Net earnings per mile	1,889.27	1,823.33	I. 65.94	3.6
Per cent. of expenses	62.21	67.02	D. 4.81	7.2

The expenses include all taxes paid during the year.

Indianapolis, Bloomington & Western.—The United States Circuit Court at Indianapolis has decided in favor of the Rogers Locomotive Works, of Paterson, N. J., on their claim for $151,000 for the hire and use of engines built by them for this road and for some time in service upon it. The Receiver is directed to pay the claim from the earnings of the road.

Indiana Southern.—This company has been organized

to build a railroad from Cannelton, Perry County, Ind., northwest through Spencer, Dubois and Daviess counties to Washington, about 60 miles. The capital stock is to be $500,000.

Joplin & Short Creek.—This company has filed articles of incorporation in Kansas. Its office is in Girard, Kan., and the directors are all officers of the Joplin Railroad Company, of Missouri.

Kansas Pacific.—Attorney-General Devens has directed that an appearance be entered for the Government in the foreclosure suit now pending, in order to protect the lien of the Government upon the property, which is prior to that of the mortgage sought to be foreclosed. This action is subject to the decision of the Court as to the authority of the Attorney-General to represent the United States in the matter without further legislation. He also asks special authority from Congress to act in any foreclosure or other suit against any of the Pacific railroads in which the Government lien may be affected.

Lake Huron & Southwestern.—This company was recently organized to build a narrow-gauge road from Lake Huron at Tawas City, Mich., west by south to town 21 north in range 4 east, a distance of about 24 miles. The capital stock is to be $70,000. The road would be used chiefly for lumber.

Mt. Gilead.—It is proposed to build a branch about four miles long from Mt. Gilead, O., west to Gilead station on the Cleveland, Columbus, Cincinnati & Indianapolis. The parties interested have procured an act from the Ohio Legislature authorizing the town to build the road, provided the property-owners decide in favor of it by a majority vote.

Milwaukee, Lake Shore & Western.—Work is well advanced on an extension from New London, Wis., northwest to Clintonville in Waupaca County, a distance of 17 miles. The company hopes to have trains running over it by June.

The United States Rolling Stock Company which is suing to recover $20,000 from this company, has filed an information in the Wisconsin Supreme Court, claiming that the company keeps its official records and books in New York, and not in the State of Wisconsin as required by law.

Missouri, Kansas & Texas.—This company has put on a new passenger train, making two daily trains through from Hannibal to Denison. Both trains carry through sleeping cars to Houston. The through trains now leave Chicago at 10:30 a. m. and 9:05 p. m.; Hannibal, 10:30 a. m. and 10:30 p. m.; St. Louis, 8:47 a. m. and 9:35 p. m.

New York & New England.—It is said that the Finance Committee of the Massachusetts Legislature will report against the proposed $6,000,000 State loan to this company, and that a minority report in its favor will be made.

The latest proposal for a settlement of the company's affairs is a consolidation with the Boston & Providence. It is urged that the new company would command credit enough to finish the road to the Hudson River without State aid; that it would have abundant terminal facilities in Boston without further expenditure, and that the cost of management would be much reduced. Some unnecessary competition would also be prevented. Railroad Commissioner Adams is said to favor this plan.

New York Central & Hudson River.—This company is preparing to build an additional grain elevator at the Sixty-first street freight terminus in New York. The building will be of wood, with stone foundations, part of the foundation resting on piles driven in the river bed. The elevator will be 70 by 316 feet, with an extreme height of 160 feet, and will have a capacity of 800,000 bushels, or about half that of the one now in use, which is not sufficient for the business. The storage capacity of the two will be 2,400,000 bushels. The contract for the foundation has been let to Brown, Ripley & Smith, of New York; the stone will come from the McDonald quarry at Willsboro, N. Y., on Lake Champlain.

With the new time-table this company has put on a new mail and express train between New York and Buffalo. It leaves New York at 7.30 p. m., and is made up chiefly of postal and express cars, only a limited number of passenger cars being taken. The new train is put on chiefly to relieve the other evening express trains of the mail and express cars, which have made them inconveniently heavy. It will stop only at Albany, Utica, Syracuse and Rochester.

New England Car Clearing House.—The recent meeting of New England railroad managers placed the organization of the proposed car-accounting or clearing-house association in the hands of a committee consisting of Wm. Bliss, General Manager of the Boston & Albany; George W. Bentley, General Manager of the Central Vermont, and A. A. Folsom, Superintendent of the Boston & Providence. Mr. E. B. Hill is to be the Manager of the Association. The committee is now considering the details of the new organization.

New Haven & Northampton.—It is probable that a freight branch will be built from the Holyoke & Westfield Branch of this road around the lower end of Holyoke, reaching a number of large mills in that part of the town.

The wooden bridge over the Westfield River at Westfield, Mass., is shortly to be replaced with a new iron one.

Northern Pacific.—The compromise bill extending the time for the completion of this road ten years has passed the Senate with amendments prohibiting the issue of bonds or the execution of a mortgage except by the consent of the holders of two-thirds of the preferred stock, and requiring the company to procure the consent of the State of Oregon to the construction of the road around the Lower Cascades and the Dalles of the Columbia River. The bill requires the company to build 75 miles westward from Bismarck the first year and not less than 60 miles a year thereafter, and on the western end to build 25 miles eastward from the Columbia River the first year and 40 miles a year thereafter.

Norton & Chicago.—The people of Norton, Ill., have subscribed a considerable amount to secure railroad connection, and are now considering the merits of two rival lines. One is a line from Norton north to Wilmington on the Chicago & Alton, about 20 miles, with a possible extension south 40 miles to Paxton. The other is a line from the Illinois Central in the town of Otto west 15 miles to Norton, and thence south by east 40 miles to the Chicago & Paducah at Strawn.

Ohio & Mississippi.—Referring to the plan for reorganization, the *Commercial and Financial Chronicle* says: "It is stated now (April 19) that of the Springfield Division bonds a surrender of $500,000 in bonds and coupons is agreed to, conditional upon the company cancelling $500,000 of the same bonds held by them. The first coupon will be payable on May 1, 1879. The reduction in the mortgage indebtedness of the Ohio & Mississippi Railway effected under this arrangement is $800,000, with the postponement of all interest on the reduced amount until May 1, 1879."

Olympia.—The grading of this road is nearly finished and but little bridging remains to be done. The iron has been contracted for in San Francisco and a locomotive ordered. The cars will be built at Olympia, the trucks for them having been bought. The road is to run from Olympia, Wash. Ter., to the Northern Pacific at Tenino, about 15 miles.

Pennsylvania.—The evidence being taken in the test case of Sherman, Hall & Co. in the United States Circuit Court in Philadelphia, to recover damages for goods destroyed at Pittsburgh, counsel on both sides, on April 22, agreed to dispense with a jury and to leave the decision of all questions, both of law and fact, with the Court. Arguments were then made by both parties, and the Court took the case under advisement.

The report for all lines east of Pittsburgh and Erie for March, as compared with March, 1877, shows an increase in gross earnings of $88,482; an increase in expenses of $14,280, and an increase in net earnings of $74,202.

Pennsylvania Oil Pipe Lines.—The general law providing for the formation of oil pipe lines, known as the Free Pipe Bill, has passed to a second reading in the Pennsylvania Assembly by a considerable majority. An amendment prohibits lines organized under its provisions from crossing the State line or connecting with lines in other States. It is thought probable, however, that the bill will yet be defeated.

Powell's Valley.—This company has completed its preliminary organization and filed articles of incorporation, with J. S. Lindsey, Frank Kincaid, Henry E. Colton, Ben C. Wheeler, J. H. Claiborne, John Myers and David Lay as incorporators. The proposed line is from Careyville, Tenn., on the Knoxville & Ohio road, northeast up the valley of Powell's River to Cumberland Gap, about 40 miles.

St. Louis & Southeastern.—The following circular is dated April 15, and signed by J. H. Wilson, Receiver and General Manager:

"In pursuance of the policy of the Louisville & Nashville Railroad to debar the Southeastern Railway from sending freights from Nashville, Tenn., to Montgomery, Ala., and intermediate points, that company has refused, since Jan. 10, 1878, to honor the bills of lading of the Southeastern Railway and lines working in connection therewith. All efforts to secure repeal of this order having failed, we hereby give notice that on and after April 22, 1878, the Receivers of this railway will not be bound by any rate or contract made by the Louisville & Nashville Railroad, nor by the bill of lading of any railroad working in connection with that line; further than that they will receive freights from the said Louisville & Nashville Railroad for transportation over this line, provided freights in less than car load quantities are delivered upon our depot platforms and freights upon which car load rates are given, are delivered to us in our cars, in all cases without back charges, and with transportation charges over our line prepaid."

St. Paul & Pacific.—The St. Paul *Pioneer-Press* of April 20, says: "Application was made yesterday at St. Louis before Judge Dillon, now holding a term of the United States Circuit Court at that place, by the bondholding interest of the St. Paul & Pacific Railroad for authority to issue debentures for the completion of the unfinished branches of that road. Application was also made for power to sell the lands accruing to the company upon the construction of the roads. The Receiver of the road, Mr. J. P. Farley, Mr. J. J. Hill, representing the Canadian and Minnesota bondholding interest, and Messrs. George L. Otis and I. V. D. Heard, counsels for the same parties, are now at St. Louis in the interest of these important proceedings upon which depend the construction of the branch lines of the St. Paul & Pacific Railroad the present year. It was expected that the Northern Pacific Railroad, or some of its representatives, would interpose objections to the granting of the privileges applied for, but, happily, no opposition seems to have been manifested in any quarter, except from the stockholders of the First Division Company, which, through its attorney, H. R. Bigelow, of St. Paul, merely filed a written protest. There seems to be no doubt that Judge Dillon will grant the relief sought for, especially as the Court at a previous term granted the authority to issue debentures for construction purposes, but the time having lapsed, a new order for the purpose is thought to be advisable. The new company, besides, agree to build the roads at a much less cost than was considered necessary when the last action was had before Judge Dillon. * *

"We learn by telegraph from St. Louis that Judge Dillon has granted the order substantially as applied for by the parties who propose to build the road."

Sandy River Valley.—A survey is being made for this road from Farmington, Me., the terminus of a branch of the Maine Central, northwest up the Sandy River to Phillips, a distance of 18 miles. The company expects to build to Phillips this year, and next year to extend the line 20 miles further to the Rangeley Lakes, a noted resort for fishermen and hunters. The road is to be of 2 ft. gauge, on the same plan as the Billerica & Bedford.

Santa Fe Canal.—An Alger steam dredge has been put at work on this canal, and will be kept steadily in use until it is completed. The canal is to connect Santa Fe Lake in Florida with Lake Alto, and also with the Atlantic, Gulf & West India Transit road at Waldo. It will connect the railroad with more than 30 miles of navigation through a fertile region, by the opening of a little more than two miles of canal.

Southern Maryland.—This company has petitioned Congress for a Government guarantee on its bonds to the amount of $15,000 per mile. The road is to extend from Washington to Point Lookout, Md., 76 miles; a part of it was graded several years ago, but the company was never able to raise money to complete. The reasons given for Government aid are the proposed establishment of a naval coaling station at St. Mary's River, which could be reached by this road, and the advantage to the Government of a short line from Washington to Fort Monroe and Norfolk. The country along the line has very little traffic.

Southeastern, of Canada.—The terms of the settlement agreed upon finally between this company and the Connecticut & Passumpsic Rivers Company, are stated as follows: The Passumpsic Company, which holds all the bonds, will obtain title by foreclosure to the Missisquoi & Clyde Rivers road in Vermont, and will give the Southeastern, as soon as title is obtained, a perpetual lease of it for $6,000 a year. It relinquishes to the Southeastern all the rolling stock that it had held as security for its debt, and reduce the debt to $100,000, which is to be paid in twenty semi-annual installments of $5,000, with interest at 6 per cent. The Southeastern is to commence running trains through to Newport at once, where it will make close connection with the Passumpsic trains.

Standard Oil Company.—On the application of this company to remove the suit of H. L. Taylor and others from the Butler County (Pa.) Court to the United States Circuit Court, argument was closed before the last-named court in Philadelphia, April 20, and the case was taken under advisement. The defendants (the Standard and others) claim that they are citizens of Ohio, and that the case comes properly under the jurisdiction of the Federal courts.

Texas Train Robberies.—Violent stoppage of trains and robberies of express cars and passengers have occurred so frequently of late that a deputation of railroad officers lately visited Austin in order to arrange some action with the State officers to stop this trouble. The Governor promised all the aid in his power and authorized the Adjutant-General of the State to carry out certain measures, the nature of which has not been made public for prudential reasons. He also directed that prosecuting officers shall take especial pains to secure the arrest of persons engaged in train robberies.

Terre Haute & Worthington.—Mr. R. G. Hervey, of Terre Haute, Ind., formerly President of the Illinois Midland, has taken an interest in this projected road, and measures are to be taken at once to put the line under contract. It is to run from Terre Haute southeast to Worthington, about 40 miles.

Wetumpka Branch.—Work is well advanced on a branch line from Elmore, on the South & North Alabama road, east to Wetumpka, about eight miles. The track is being laid and it is expected that trains will run in a few weeks.

Wilmington & Weldon.—At a meeting of the local stockholders held some time since in Wilmington, N. C., a circular was prepared protesting against the action of the directors in voting an issue of $150,000 of bonds to be transferred to the Wilmington, Columbia & Augusta Company, lessee of the road, in payment for improvements made. The circular further claims that the issue is of doubtful legality, and charges that the majority of the board act only to protect their interest in the Wilmington, Columbia & Augusta, and without regard to the interest of other stockholders in the Weldon road.

In reply the Baltimore directors say that the issue of bonds in question was intended only to be used as collateral for notes made in payment for steel rails; that the management has acted in good faith toward the stockholders, and that the local stockholders have a full representation in the board; that the road has been greatly improved since the lease, and that default in the rental was made only when the lessee was forced to do so by the great falling off in earnings. Should the Wilmington, Columbia & Augusta bondholders, who are now suing to enforce their lien on that road, decline to pay up the rental due on the Wilmington & Weldon road, that road will be surrendered to the company, which will receive it back free from floating debt, and in a better condition than ever before. They say also that the two roads form part of the same line, and that harmony in management is necessary for the welfare of both. They are among the largest stockholders and deeply interested in the proper management of the road.

ANNUAL REPORTS.

Michigan Central.

The annual report of this company is published just as we go to press, allowing time this week only to use a few figures. The report this year covers only seven months, from June 1, to Dec. 31, 1877, the fiscal year having been changed so as to end with December instead of May as heretofore.

The general account is as follows:

Stock		$18,738,204.00
Bonded debt		13,191,000.00
Balance of income account		3,030,905.92
Total		$34,960,109.92
Construction account	$28,305,403.75	
Construction account—branches	4,630,334.33	
Sundry securities	720,578.80	
Equipment bond trustees	545,245.82	
Sleeping-Car Company stock	12,733.34	
Detroit & Bay City Railroad	255,351.78	
Chicago & Michigan Lake Shore Railroad	97,840.19	
Material account	256,656.28	
Bills receivable	60,466.22	
Miscellaneous accounts	42,616.90	
Cash	32,882.51	
		$34,960,109.92

The earnings for the seven months were as follows:

	1877.	1876.	Inc. or Dec.	P.c.
Freight	$2,516,686	$2,287,734	I. $228,952	10.0
Passengers	1,203,375	1,348,059	D. 144,681	10.7
Other sources	183,452	186,404	D. 2,951	1.5
Total	$3,903,513	$3,822,197	I. $81,316	2.1
Exps. and taxes	2,591,015	2,788,975	D. 197,959	7.1
Net earnings	$1,312,498	$1,033,222	I. $279,275	27.0
Gross earn. per mile	4,855	4,754	I. 101	2.1
Net earn. per mile	1,632	1,285	I. 347	27.0
Per cent. of expenses	66.37	72.96	D. 6.59	9.0

The income account shows the balance of income increased by $477,000 during the seven months, bringing it up to $3,030,906 on Dec. 31.

The gain on freight comes from an increase of 0.18 cent per ton per mile, on a tonnage reduced by 118,816 tons or 27,128,868 ton-miles. The decrease in receipts from passengers comes from a loss of 49,289 passengers, or 13,972,354 passenger-miles, modified by an increase of fare amounting to 0.28 cent per passenger per mile.

All taxes have been paid and the floating debt has been entirely cleared off. During the seven months about 3,000 tons of steel rails were laid, the entire cost being charged to working expenses, making 441 miles laid with steel, or all but eight miles of the Main Line and Air Line.

Columbus & Toledo.

This company owns a line from Columbus, O., to Walbridge, 118.2, and leases the use of the Toledo & Woodville road from Walbridge to Toledo, 5.5 miles, making a line 123.7 miles long. It is practically an extension of the Columbus & Hocking Valley to Lake Erie, and is controlled by the same parties as that road. The first annual report, for the year 1877, gives the following statements as to the road: Length owned, 118.2 miles; straight track, 110 miles; curved less than 1°, 6.2 miles; from 1° to 2° curves, 1.3 miles; from 2° to 3° curves, 0.4 mile; 4½° curve, 0.2 mile, and 5½° curve, 0.1 mile, both the two last curves being in the Columbus yard. As to grades, 43.5 miles are level; 11.1 miles ascending north and 16.2 miles descending north are from 5 to 10 feet to the mile; 6.7 miles ascending north and 10 miles descending north from 10 to 15 feet; 5.4 miles ascending north and 7.6 miles descending north from 15 to 21 feet; 9.3 miles ascending north and 8.4 miles descending north from 21 to 26 feet. The highest point is 43 miles from Columbus, where the water-shed between the Ohio River and Lake Erie is crossed, 265 feet above the Olentangy bridge at Columbus, and 410 feet above Lake Erie. The road is laid with 60 lbs. rails, 64 miles with steel and 54 with iron. There are 13.33 miles of sidings. The Hocking Valley depots are used at Columbus and those of the Toledo & Woodville at Toledo, but at the latter place the company owns a large dock with hoists for coal and ore. The road was opened from Marion to Columbus, 46 miles, in November, 1876; trains ran to Toledo Jan. 10, 1877, but it was not finally finished and accepted till July. The average mileage for the 14 months of working was 110.75 miles. The equipment consists of 9

engines; 10 passenger und 4 baggage cars; 134 box, 50 stock, 66 flat, 337 coal and 6 caboose cars.

The general account is as follows:

Stock and scrip ($7,554 per mile)		$892,729.86
Bonds ($19,822 per mile)		2,343,000.00
Bills payable, accounts and balances		194,675.49
Total ($29,022 per mile)		$3,430,405.35
Construction accounts ($28,774 per mile)	$3,403,046.80	
Accounts and balances	19,518.05	
Cash	7,840.50	
		3,430,405.35

The construction account includes payments on Toledo dock property and some interest paid during construction. The earnings for the 14 months were as follows:

Passengers	$115,011.41
Freight	197,779.72
Express and mails	15,947.54
Telegraph, etc	2,143.61
Total ($2,987.65 per mile)	$330,882.28
Expenses (63.85 per cent.)	211,279.72
Net earnings ($1,079.93 per mile)	$119,602.56

The contingent account is as follows:

Interest on bills payable		$11,311.68
Interest on bonds (since organization)		134,250.55
Interest on Toledo & Woodville lease		20,521.64
Total		$166,083.87
Net earnings	$119,602.56	
Charged to construction account	46,481.31	
		166,083.87

As contingent account is charged with interest accrued prior to the opening of the road, it was thought best to charge the balance to construction. The result of the year is thought encouraging, in view of the unfinished condition of the road for several months, the depression in the coal and iron business, and the fact that the Toledo dock was not ready for use until near the close of lake navigation. Rates were also kept down by competition. A considerable traffic has begun in Lake Superior iron ore, which is used for mixing with local ores in the Hocking Valley furnaces. The grain business is considerable, and elevators have been built at several points.

The traffic for the year was as follows:

Mileage of locomotives	324,660
" passenger train cars	579,120
" freight cars	2,708,719
Passengers carried	150,922
Passenger mileage	4,095,555
Tons freight carried	177,738
Tonnage mileage	19,953,318
Average rate per passenger per mile	2.80 cts.
Average rate per ton per mile	0.99 ct.

Of the tonnage carried 53.5 per cent. was coal, 27.1 per cent. lumber, 5.3 per cent. grain, and 2 per cent. iron ore and iron.

Missouri, Kansas & Texas.

This company owns a main line from Hannibal, Mo., to Denison, Tex., 575.5 miles; the Neosho Division, a branch from Parsons, Kan., north by west to Junction City, 156.5 miles; and the Osage Division, a detached line from the Missouri Pacific at Holden, Mo., west to Paola, Kan., 54 miles, making 786 miles in all. It is held and worked by the Union Trust Company, of New York, as trustee under an agreement concluded with the bondholders March 1, 1876, the trustee having been in possession since July 1, 1876.

The report of the General Manager, Mr. Wm. Bond, to the trustee gives the following statements for the year ending Dec. 31:

Earnings:	1877.	1876.	Inc. or Dec.	P. c.
Freight	$2,176,275.33	$2,196,422.15	D. $20,156.82	0.9
Passengers	832,675.71	819,487.39	I. 13,188.32	1.6
Mail and express	149,700.34	177,444.41	D. 27,744.07	15.6
Miscellaneous	38,670.29	23,914.49	I. 14,755.80	61.7
Total	$3,197,321.67	$3,217,278.44	D. 19,956.77	0.6
Expenses and renewals	2,034,932.80	1,845,394.93	I. 189,537.87	10.3
Net earn.	$1,162,388.87	$1,371,883.51	D. $209,494.64	15.3
Gross earn. per mile	4,067.84	4,093.22	D. 25.38	0.6
Net earn. per mile	1,478.87	1,745.40	D. 266.53	15.3
Per cent. of exps	63.64	57.35	I. 6.29	11.0

The chief increase in expenses was in renewals, which amounted to $416,197.71 in 1877, against $214,817.37 in 1876. From the net earnings above are to be deducted $113 724.02 for permanent improvements, and $96,453.67 taxes paid, leaving a net surplus for 1877 of $952,211.18, or $1,211.46 per mile.

The traffic for the year was as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Train mileage, passenger	843,891	736,183	I. 107,708	14.6
Train mileage, freight	1,587,092	1,229,970	I. 357,122	29.0
Total	2,430,983	1,966,153	I. 464,830	23.6
Locomotive mileage	2,554,729	2,382,483	I. 172,246	7.2
Freight car mileage	22,903,592	19,987,680	I. 2,915,912	14.9
Passengers carried	225,722	210,824	I. 14,898	7.1
Passenger mileage	24,520,660	23,937,440	I. 583,220	2.4
Tons freight carried	500,792	440,848	I. 59,944	13.6
Tonnage mileage	110,895,714	105,110,714	I. 5,785,000	5.5
Average pass. train load, No.	29.06	32.52	D. 3.46	10.6
Av. freight train load, tons	69.87	85.46	D. 15.59	18.2

In 1877 the traffic was equivalent to 423¼ passengers, and 193¼ tons of freight carried each way daily over the entire 786 miles of road.

Locomotive service cost 18.08 cents per mile. Of the freight car mileage 30.6 per cent. was of empty cars. The gross and net earnings per train mile and per unit of traffic were, in cents:

	Earnings.	Expenses.	Net earn.
Per passenger train mile	98.670	78.640	20.030
Per freight train mile	137.120	86.400	50.720
Per passenger per mile	3.400	2.710	0.690
Per ton per mile	1.962	1.237	0.725

The average rate per ton per mile in 1876 was 2.089 cents, showing a decrease in 1877 of 0.127 cent, or 6.1 per cent. The average passenger train was five cars, and the cost per car per mile 15.72 cents; average freight train, 14.9 cars; cost per car per mile, 5.80 cents.

The report gives a very full statement of the extensive renewals of bridges and buildings made; the Red River bridge was completed early in the year. Renewals of track included 4,228 tons of 52-lb. steel, 497 tons of 56-lb. iron rails, and 368,161 new ties. The difference in cost between new steel and new iron rails was charged to permanent improvements. The rail renewals were equivalent to about 6 per cent. of the whole amount of rails in track.

The business of the road was injured by light crops in Texas and Kansas, by interruption to travel by floods in June, and by the strikes in July and by heavy rains and bad roads through the winter. Of the total tonnage carried 24.3 per cent. was merchandise, 23.6 per cent. grain, 22.9 per cent. live stock, 10.4 per cent. lumber, 10.4 per cent. coal, and 1.9 per cent. cotton. The extension of the International & Great Northern to Austin has diverted some traffic to the Texarkana route.

The Land Department sold 76,694 acres for $170,758.65, of which $10,830.20 was paid in cash, $23,589.32 in notes and $136,339.13 in bonds and coupons. Cash receipts of Land Department were $29,483.65; expenses, $34,201.09, and taxes $33,893.82. There were $160,000 in canceled bonds delivered to the trustees, and $6,000 more ready for delivery.

The Trustee reports that $2,655,000 out of $2,731,000 Union Pacific Southern Branch bonds, and $14,607,000 out of $14,752,000 Missouri, Kansas & Texas consolidated bonds have been stamped as assenting to the agreement. Of the $1,210,124.75 preferred stock, all but $124,044.48 has been surrendered; $6,025,500 income bonds have been issued, or are ready for delivery, leaving $115,032.76 certificates outstanding.

The Trustee's account for the year was as follows:

Balance from 1876		$206,851.12
Net proceeds of road		925,887.64
Balance of account with former Receiver		95,261.33
Repayment of preferred stock dividend		107.20
Gold on hand distributed to coupon accounts		7,879.38
Interest		1,076.33
Total		$1,237,063.00
Gold bought to pay coupons	$809,677.52	
Paid to equalize November, 1874, dividend	13,449.90	
Land Department	38,984.38	
North Texas Compress Co	24,877.00	
Discount, interest, legal expenses, etc	60,585.04	
		947,573.84
Balance		$289,489.16

Of this balance, $226,601.49 is in notes of the Houston & Texas Central Company, taken in settlement. The account with the Boonville Bridge is as follows:

Balance from 1876		$14,130.74
Tolls, $119,499.38, less taxes and improvements, $14,003.22		105,496.16
Interest		166.52
Total		$119,793.42
Coupons and sinking fund	$83,780.20	
Insurance, commission, etc	1,544.88	
		85,325.08
Balance		$34,468.34

All coupons payable under the agreement were paid, but the August coupon was delayed until Nov. 15.

Richmond & Danville.

The thirtieth annual report of this company covers the year ending Sept. 30, 1877, during which it worked the following lines:

	Miles.
Richmond, Va., to Danville	140.5
Freight branches in and near Richmond	8.7
Piedmont R. R., Danville to Greensboro, N. C	48.5
Total Richmond & Danville Division	197.7
North Carolina R. R., leased, Goldsboro, N. C., to Charlotte	223.0
Northwestern North Carolina R. R., leased, Greensboro to Salem	29.0
Total	449.7

The Piedmont Railroad, nominally leased, is really owned, the company holding all the stock but a few shares.

The equipment consists of 59 engines; 16 first-class and 21 second-class passenger, 2 parlor and 24 baggage, mail and express cars; 469 box, 12 stock, 269 flat, 42 coal, and 24 conductors' cars; 1 superintendent's car, 1 pay-car, and 22 shanty cars.

The general account is as follows:

Stock ($19,557 per mile)		$3,866,400.00
Balance due on State of Virginia $600,000 loan		508,486.00
Bonded debt ($17,048 per mile)		3,370,300.00
Bills and accounts payable		387,526.99
Accounts, balances and interest		165,013.20
Total ($41,971 per mile)		$8,297,726.19
Road and property ($39,409 per mile)	$5,879,853.27	
Piedmont R. R. stock and advances ($34,416 per mile)	1,670,194.12	
Northwestern N. C. stock and bonds	289,631.49	
Other bonds	72,000.00	
Materials and supplies	82,883.69	
Balances due	53,713.23	
Profit and loss	200,840.15	
Cash	48,610.24	
		8,297,726.19

On the Virginia State loan $42,000 is paid yearly as interest and in reduction of principal.

The earnings of the entire system, as given in the report of General Superintendent T. M. R. Talcott, were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Freight	$862,547.53	$846,610.31	I. $15,937.22	1.8
Passengers	425,118 47	480,518.40	D. 55,399.93	11.5
Mail, express, etc	123,618.34	141,184.95	D. 17,566.61	1.2
Total	$1,411,284.34	$1,468,313.66	D. $57,029.32	38.9
Expenses	826,402.74	834,649.44	D. 8,246.70	1.0
Net earnings	$584,881.60	$633,664.22	D. $48,782.62	7.7
Gross earn. per mile	3,138.28	3,265.10	D. 126.82	38.9
Net earn. per mile	1,300.60	1,409.08	D. 108.48	7.7
P. cent. of exps.	58.55	56.84	I. 1.71	3.0

In addition to ordinary renewals $97,840 was paid for 2,200 tons steel rails and laying the same; $11,094.62 for Westinghouse air brakes, and $4,952.51 for repairing engines formerly loaned to Atlanta & Richmond Air Line, making $113,887.13 for extraordinary expenses. The ordinary renewals included 3,054 tons iron rails and a large amount of repairs to equipment.

The work of the year was as follows:

Train mileage:	1876-77.	1875-76	Inc. or Dec.	P. c.
Passenger	412,457	459,573	D. 47,116	10.3
Freight	478,287	427,649	I. 50,638	11.8
Service	197,103	167,901	I. 29,202	17.4
Total	1,087,847	1,055,123	I. 32,724	3.1
Passengers carried	180,789			
Passenger mileage	11,513,977	13,438,508	D. 1,924,531	14.3
Tons freight carried	264,834	272,420	D. 7,586	2.8
Tonnage mileage	29,526,789	24,463,376	I. 5,063,423	20.7
Average train load:				
Passenger, No	27.92	29.24	D. 1.32	4.5
Freight, tons	61.73	57.21	I. 4.52	7.9
Mileage of pass. cars	2,111,441			
Mileage of freight cars	5,883,068			

The traffic for the last year was equivalent to 35 passengers and 90 tons of freight each way daily over the whole 450 miles of road.

Included in freight train mileage are 20,284 miles run by mixed trains on Northwestern North Carolina road. A great falling off is reported in local travel, with an increase in freight traffic, but at reduced rates. The average rate per passenger per mile was 3.692 cents; per ton per mile on Richmond & Danville Division, 2.89 cents; on North Carolina road, 2.83 cents; on Northwestern North Carolina, 9.06 cents. For eight months of the year only one through passenger train was run. The earnings per revenue train mile were as follows, in cents:

	1876-77. Earn.	Exps.	Net Earn.	1875-76. Earn.	Exps.	Net Earn.
Richmond & Danville	176.79	97.77	79.02	186.13	99.09	87.04
North Carolina	131.41	85.53	45.88	137.05	88.01	49.04

The traffic and earnings were divided as follows:

	Rich. & Dan.	North Carolina.	N. W. N. C.
Train mileage	640,050	427,513	20,284
Passenger mileage	5,945,446	5,306,253	262,278
Tonnage mileage	21,185,343	8,117,497	223,949
Gross earnings	$909,317	$467,996	$33,971
Net earnings	406,379	163,385	15,018
Gross earnings per mile	4,593	2,099	1,171
Net earnings per mile	2,053	733	518
Per cent. of expenses	55.29	65.09	55.79

Thus the Richmond & Danville, with but 31¼ per cent. of the total mileage, had more than half of the total passenger traffic and nearly 72 per cent. of the freight traffic, and produced nearly 70 per cent. of the profits.

The annual rental paid for the North Carolina Railroad being $260,000, there was a loss of $96,615.13 on the lease. For the Northwestern North Carolina, the net earnings are applied as rental. The income and profit and loss accounts, condensed, were as follows:

Richmond & Danville, net earnings		$406,478.52
Less extraordinary expenses		113,887.13
Net balance		$292,591.39
Interest received on investments		43,982.51
Total		$336,573.99
Interest on funded and floating debt	$863,052.43	
Rental Piedmont R. R.	60,000.00	
Loss on North Carolina lease	96,615.13	
		419,667.56
Deficiency for the year		$83,093.66
Discount on bonds		35,600.00
Company's stock bought and canceled		45,706.28
Roanoke Valley bonds bought and canceled		10,596.71
Sundry accounts charged off		38,787.28
Debit balance from 1876		128,009.93
Total		$341,793.86
Company's stock extinguished	$133,600.00	
Sundry accounts	7,353.71	
		140,953.71
Debit balance, Sept. 30, 1877		$200,840.15

The reports of the General Superintendent and Auditor are very complete, and contain much interesting information not usually given in annual reports, and not often accessible.

Connecticut River.

This company owns a line from Springfield, Mass., northward through the Connecticut Valley to South Vernon, 50 miles, with branches from Chicopee Junction to Chicopee Falls, 2.35 miles, and from Mt. Tom to Easthampton, 3.5 miles; it leases the Ashuelot road from South Vernon to Keene, N. H., 23.75 miles, making 55.85 miles owned and 79.60 worked. The Ashuelot road was worked only from April 21, 1877, or for 5½ months of the fiscal year, which is that ending Sept. 30, 1877. The road serves a thickly settled country, with many manufacturing towns and villages, and is an important part of the line up the Connecticut Valley to Vermont and the White Mountain region, and beyond to Montreal and Quebec.

The general account is as follows:

Stock ($37,601 per mile)		$2,100,000.00
Funded debt ($4,476 per mile)		250,000.00
Notes payable		220,400.00
Accounts and balances		115,085.18
Profit and loss		561,665.23
Total ($58,320 per mile)		$3,247,150.41
Construction and equipment (48,187 per mile)	$2,691,242.89	
Other investments	102,127.32	
Sinking fund	205,624.16	
Supplies and materials	53,893.65	
Cash and balances due	194,262.39	
		3,247,150.41

There was no change in stock, bonds or notes payable, and no addition was made to construction account.

The earnings for the year were as follows:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Passengers	$263,551.57	$289,093.40	D. $25,541.83	8.8
Freight	274,476.98	256,411.50	D. 18,065.48	7.0
Mails and expr	24,165.91	24,046.36	I. 119.55	0.5
Rents, etc	11,108.17	19,985.60	D. 8,877.43	44.4
Total	$573,302.63	$589,536.86	D. $16,234.23	2.8
Expenses	371,371.36	382,269.44	D. 10,898.08	2.9
Net earnings	$201,931.27	$207,267.42	D. $5,336.15	2.6
Gross earn per mile	8,632.78	10,555.70	D. 1,922.92	18.2
Net earn. per mile	3,040.68	3,711.14	D. 670.46	18.1
Per c. of exps.	64.78	64.84	D. 0.06	0.1

The income account was as follows:

Net earnings		$201,931.27
Accretion to the sinking fund		10,872.88
Interest received		488.16
Total		$213,292.31
Paid on Ashuelot R. R. contract	$5,612.56	
Interest	26,647.57	
Dividends, 8 per cent	168,000.00	
		200,260.13
Surplus for the year		$13,032.18
Surplus from previous year, less accounts charged off		548,633.05
Total surplus		$561,665.23

The traffic for the year was as follows:

	1876-77.	1875-76.	Inc. or D.	P. c.
Train mileage	342,710	329,139	I. 13,571	4.1
Passengers carried	896,748	921,395	D. 24,647	2.7
Passenger mileage	9,777,284	10,359,021	D. 581,737	5.6
Tons freight carried	292,029	278,508	I. 13,521	4.9
Tonnage mileage	6,858,585	6,454,027	I. 404,558	6.3
Earn. per train mile	$1.710	$1.790	D. $0.080	4.5
Net per train mile	0.606	0.753	D. 0.147	19.5
Earn. per pass. per mile	2.7 cts.	2.7 cts.		
Earn. per ton per mile	4.0 cts.	3.3 cts.	I. 0.7 ct.	21.2

The traffic of the last year was equivalent to 197 passengers and 138 tons of freight carried each way daily, over the whole average mileage worked during the year.

The cost of locomotive service was 12.2 cents per mile run with coal, and 13.7 cents with wood; car repairs cost 7.5 cents per train mile. The freight rate has increased for several years past.

Renewals include 800 tons steel rails and 32,624 ties. There are now 55½ miles of steel track, or more than half the main track, much of which is double.

The fast express train to the White Mountains was well patronized, and will be put on again next summer. Considerable aid was extended to the Vermont Valley Company in working its road, recovered from the Central Vermont in April last.